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VIA ELECTRONIC MAIL

April 8, 2004

Ms. Leanne Tippet
Missouri Department of Natural Resources
Air Pollution Control Program
P. O. Box 176
Jefferson City, MO 65102-0176

RE: Holcim (US) Inc. - Lee Island Project
Permit No. 2000-05-077
Response to Comments

Dear Leanne:

Attached please find Holcim's Response to Comments for the Lee Island project. This Response to Comments addresses the public and agency comments on the public notice of Permit Number 2000-05-077 which have been submitted to the Missouri Department of Natural Resources and provided to Holcim through March 29, 2004.

Holcim appreciates this opportunity to respond and is committed to ensuring that the Lee Island project is built and operated in an environmentally sound manner.

Since the permit application was filed on May 12, 2000, and through the process of project design, review and modification, Holcim has minimized environmental impacts – and achieved a significant improvement in the project's air emissions. As a result, the commenters, regulatory agencies, and the public can be assured that the air emissions from the Lee Island project will comply with all state and federal standards – standards that exist to protect the health of the most sensitive members of our population – and that issuance of the permit is in the public interest.

Sincerely,

A handwritten signature in black ink, appearing to read 'Eric L. Ervin'.

Eric L. Ervin
Project Manager

Enclosure – Response to Comments

RESPONSE TO COMMENTS

Permit No. 2000-05-077

Submitted To:

**Missouri Department of Natural Resources
Air Pollution Control Program**

Prepared by:

Holcim (US) Inc.

April 8, 2004

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LIST OF ABBREVIATIONS AND ACRONYMS

AAQIA	Ambient Air Quality Impact Assessment
APCP	Air Pollution Control Program
AQRV	Air Quality Related Value
BACT	Best Available Control Technology
BNSF	The Burlington Northern and Santa Fe Railroad Company
CAA.	Clean Air Act
CEM	Continuous Emission Monitor
CO	Carbon Monoxide
COM	Continuous Opacity Monitor
C.F.R.	Code of Federal Regulations
CSR	Code of State Regulations
DAT	Deposition Applicability Thresholds
DLS	Dry Lime Scrubbing
EIS	Environmental Impact Statement
ERC	Emission Reduction Credit
EPA	U.S. Environmental Protection Agency – Region 7
FOH	Friends of Hudson
FLM	Federal Land Manager
FS	Forest Service
FWS	U.S. Fish and Wildlife Service
HAP	Hazardous Air Pollutant
Holcim	Holcim (US) Inc.
IAQR	Interstate Air Quality Rule
ICT	Innovative Control Technology
IDS	Inherent Dry Scrubbing
ISCST3	Industrial Source Short Term dispersion model
KCPL	Kansas City Power and Light
LAER	Lowest Achievable Emission Rate
LSD	Lime Spray Drying
MACT	Maximum Achievable Control Technology
MADEP	Massachusetts Department of Environmental Protection
MDNR	Missouri Department of Natural Resources
MLCO	Mississippi Lime Company
MSC	Multi-Stage Combustion
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NO _x	Oxides of Nitrogen
NSPS	New Source Performance Standard
NSR	New Source Review
O&M	Operations and Maintenance
PC MACT	Portland Cement – Maximum Achievable Control Technology
PM	Particulate Matter
PM ₁₀	Particulate Matter with aerodynamic diameter less than 10 microns
PM _{2.5}	Particulate Matter with aerodynamic diameter less than 2.5 microns
PMCD	Particulate Matter Control Device
PRB	Powder River Basin (coal)

LIST OF ABBREVIATIONS AND ACRONYMS
CONTINUED

PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
RACT	Reasonable Available Control Technology
RAL	Risk Assessment Level
RFG	Reformulated Gasoline
R.S.Mo.	Revised Statutes of Missouri
SCR	Selective Catalytic Reduction
SIL	Significant Impact Level
SIP	State Implementation Plan
SLC	St. Lawrence Cement
SNCR	Selective Non-Catalytic Reduction
SO ₂	Sulfur Dioxide
SRE	System Removal Efficiency
THC	Total Hydrocarbon
TOC	Total Organic Carbon
TPD	Tons Per Day
UAM	Urban Airshed Model
USDOA	U.S. Department of Agriculture
VOC	Volatile Organic Compound
WLS	Wet Lime Scrubber

1. INTRODUCTION

On February 22, 2004, the Missouri Department of Natural Resources ("MDNR", "department") Air Pollution Control Program ("APCP") issued public notice for Permit No. 2000-05-077 for Holcim (US) Inc.'s ("Holcim")¹ application for a Prevention of Significant Deterioration ("PSD") construction permit and National Emission Standards for Hazardous Air Pollutants ("NESHAP") preconstruction approval ("Preliminary Determination", "permit" or "draft permit") for the Lee Island project ("project"). The project involves the construction of a four million metric ton per year portland cement plant, including an on-site quarry, raw material processing system, in-line kiln/raw mill system, coal mill system, product processing system, and material receiving and shipping systems, to be located in Ste. Genevieve County on the Mississippi River approximately 40 miles south of St. Louis, Missouri. In response to the public notice, many government officials, agencies, organizations and citizens submitted comments to the APCP. Holcim is providing this Response to Comments to address those comments which were submitted to the department through the end of the public comment period on March 29, 2004.

1.1. Summary of Comments and Issues

Approximately 1,715 commenters expressed written support for the project (submitting 1,690 comment letters), while approximately 52 commenters provided oral testimony expressing support for the project at the two public hearings.

Approximately 191 commenters expressed written concern about or opposition to the project (submitting 108 comment letters), while approximately 21 commenters provided oral testimony expressing concern or opposition to the project at the two public hearings.

Those submitting comments included:

- Local residents;
- Other citizens in Missouri and Illinois;
- U.S. Environmental Protection Agency Region 7 ("EPA");
- State of Illinois;
- Federal Land Manager ("FLM");
- Elected officials;
- Environmental groups; and,
- Miscellaneous organizations.

This Response to Comments provides a written response to those comments which expressed concern about or opposition to the project. Generally, the concerns raised by those comments can be categorized as follows:

- The facility's air emissions would cause adverse health effects and adversely affect the St. Louis ozone nonattainment area.
- Additional controls for oxides of nitrogen ("NO_x"), including Selective Catalytic Reduction ("SCR"), should be required.

¹ On December 12, 2001, Holnam, Inc. changed its name to Holcim (US) Inc.

- The permit did not consider the new standards for fine particulate (“PM_{2.5}”) and 8-hour ozone.
- The plant’s mercury emissions would cause adverse health effects.
- The project’s economic benefits are not significant enough to warrant issuing the permit
- The permit should be denied.

1.2. Organization of Response to Comments

Due to the volume of comments and the similarity of many of the comments, it is not practical to separately identify and respond to each comment. Instead, the comments – from agencies, organizations, citizens, and elected officials – are grouped by issue or commenter. This grouping includes:

- Section 2. – Comments submitted by EPA;
- Section 3. – Comments submitted by the State of Illinois;
- Section 4. – Comments submitted by FLM; and,
- Section 5. – General comments submitted by citizens or organizations.

Additionally, each comment is identified with a unique identification number to enable cross-referencing responses to similar comments. In this manner, this Response to Comments addresses the comments in a manageable format, avoiding excessive repetition.

1.3. Summary

Holcim has worked diligently to respond to comments. Throughout the permit review process, Holcim has been committed to an environmentally sound and responsible project. This Response to Comments clearly demonstrates that the permit should be issued. The project would enable Holcim to efficiently use the high-quality limestone mineral resources at the project site to produce a key construction material – cement – that is in great demand in the Midwestern United States. The project would enable Holcim to economically transport and supply that product to its market. The project will also bring needed economic development by bringing approximately 200 long-term, good-paying jobs and an annual payroll of approximately \$10 million to Ste. Genevieve County. The measures that Holcim has taken to ensure that air emissions and environmental impacts will not be significant further support the expeditious issuance of the permit.

2. U.S. EPA COMMENTS

U.S. EPA Region 7 ("EPA") submitted a letter to the APCP on March 29, 2004 containing "comments we hope you [MDNR] will consider" in finalizing the permit. The comment letter commended the staff and department and noted, in particular, "MDNR's commitment to protecting air quality in the St. Louis area" and EPA's belief that "the innovative NO_x mitigation approach taken in the permit is a step in the right direction."

2.1. ICT vs. BACT and Other NO_x Issues

Comment No. 1.

EPA believes that the department's characterization of selective non-catalytic reduction ("SNCR") as innovative control technology ("ICT") is not supported by the record nor does the record show that the proposed decision is a reasonable application of "top-down" BACT review.

Response

Holcim disagrees with the comment. Holcim believes that the permit record clearly documents application of the "top-down" Best Available Control Technology ("BACT") evaluation process. The Preliminary Determination (p. 23) contains the department's approach to the "top-down" method, which is adopted directly from EPA's New Source Review Workshop Manual (Draft, Oct. 1990). The department documents its step-by-step analysis for each pollutant in the Preliminary Determination and provides a reasoned justification for its determination, identifying additional information in the record on which the BACT determination was based.

Holcim submitted several documents regarding the BACT determination including a November 20, 2002 document *Response to Preliminary Best Available Control Technology Determination* as a compilation of all information previously submitted to the APCP regarding the Lee island BACT analysis. This document, in particular, was incorporated by reference into the Preliminary Determination.

Additionally, Holcim supplied the department with documentation relating to the direct applicability of SNCR as an Innovative Control Technology in a letter of February 18, 2003 (also incorporated into the Preliminary Determination by reference). It should be noted that this correspondence clearly identifies that it is the combination of SNCR with multi-stage combustion ("MSC") under the specific regulatory requirements of the U.S. that is innovative, not simply SNCR as the comment suggests.

Finally, the Preliminary Determination itself contained a thorough review of the regulatory requirements for implementing an ICT program. The use of SNCR as ICT has been shown to meet all applicable requirements for ICT.

The department's summary of SNCR as ICT is supported in the record and the BACT analysis was the result of a reasonable application of the "top-down" BACT review process.

Comment No. 2.

EPA recommends that unless SNCR is selected as BACT, the record should be supplemented.

Response

Holcim believes the permit record clearly reflects that the SNCR technology is infeasible as BACT for NO_x. On November 20, 2002, Holcim submitted the document *Response to Preliminary Best Available Control Technology Determination* as a compilation of all information previously submitted to the APCP regarding the Lee Island BACT analysis. Note that this document is incorporated by reference in the Preliminary Determination (see page 55 of the Preliminary Determination). The SNCR technology was extensively evaluated in the November 20, 2002 “top-down” BACT analysis and found to be infeasible as BACT for NO_x due to adverse economic, energy and environmental impacts.

Comment No. 3.

EPA believes that SNCR should not be eliminated on the basis of cost.

Response

The SNCR technology was extensively evaluated in the November 20th “top-down” BACT analysis and found to be infeasible as BACT for NO_x due to adverse economic, energy and environmental impacts. While an economic assessment was completed, the primary reason for eliminating SNCR as BACT was due to environmental impacts. As the Preliminary Determination stated (p. 32):

“The use of SNCR at cement plants in the U.S. will create, under certain atmospheric and processing conditions, a detached plume and its associated opacity due to increased ammonia emissions. The federal MACT regulation for Portland cement manufacturing (40 C.F.R. Part 63 Subpart LLL) establishes an opacity limit of 20% for new kilns. The potential for an opacity violation of a state and federal regulation would have to be addressed before, or as a part of, determining that SNCR is BACT. SNCR must be eliminated from further consideration as BACT for NO_x based on environmental and economic impacts.”

MDNR’s concern with the environmental impacts, particularly opacity, provides a reasoned justification for its BACT determination. In fact, in the New Source Review Workshop Manual, EPA specifically stated that:

“the environmental impacts portion of the BACT analysis concentrates on impacts other than impacts on air quality (i.e., ambient concentrations) due to emissions of the regulated pollutant in question, such as solid or hazardous waste generation, discharges of polluted water from a control device, **visibility impacts**, or emission of unregulated pollutants.” Workshop Manual, IV.D.3, at B.46 (emphasis added).

The department correctly applied the “top-down” BACT review process in eliminating SNCR.

Comment No. 4.

The reliance on adverse opacity to exclude SNCR raises a number of other questions which are not addressed in the permit record.

Response

The APCP developed the Preliminary Determination with the use of SNCR as ICT because SNCR has not been adequately demonstrated under the full regulatory requirements applicable to cement manufacturing facilities operating in the United States, although it has been shown to be an effective technology outside the U.S. As described in the “top-down” BACT analysis, SNCR cannot be considered as BACT from a practical standpoint because of the risks associated with the development of a detached plume.

The opacity standard is part of the Missouri State Implementation Plan (“SIP”) and is also included in the Portland Cement MACT (“PC MACT”) rule. The APCP and EPA could issue exceptions to the state and federal opacity requirements. However, such exceptions would require future rulemakings, necessitating the appropriate public notices and hearings, and granting of an opacity exception is not guaranteed. Until such a time as the opacity exceptions are promulgated or a finding is made on opacity not being a basis for environmental protection, MDNR must maintain the position that an opacity violation is adverse to environmental protection and a violation of law.

Opacity, in the form of a detached plume, becomes an issue with the operation of SNCR during certain atmospheric conditions (primarily cool weather). In addition, ground level ozone formation occurs only during another certain set of atmospheric conditions (primarily warm weather). In consideration of the different atmospheric chemistries that result in ozone and detached plume formation, Holcim and the APCP felt that seasonal usage of SNCR could be compatible with the concept of maximizing NO_x reduction when the ozone formation would be problematic and not using SNCR when detached plume formation issues would occur. Both Holcim and the APCP felt that this use of an advanced technology that has not been effectively demonstrated in the United States due to the risk of detached plume formation does meet the criteria for ICT. Additionally, it will not necessitate the development of an alternative opacity standard, or other special provision for opacity, by both EPA and the APCP, which is beyond the scope and authority of the PSD permitting process. With the current BACT analysis conclusions, the ICT specifications encompass the only special provision necessary to address the potential for adverse opacity.

Comment No. 5.

The record should consider alternatives for establishing alternative opacity limits, if needed, before disqualifying SNCR as BACT due to opacity concerns.

Response

Holcim disagrees with this comment. See Responses to Comments No. 4 and No. 26. The department has provided a reasoned justification for its decision to disqualify SNCR as BACT due to adverse economic, energy, and environmental concerns. Additionally, consideration of alternative opacity limits is not required or necessary in the context of a BACT determination. Although the APCP and EPA could issue exceptions to the state and federal opacity requirements, such is beyond the scope of the PSD permitting process. According to the New Source Review Workshop Manual, once a particular control option is eliminated based on energy, environmental, or economic impacts, the next most stringent alternative becomes the top candidate and is similarly evaluated. There is nothing in the Manual to suggest that the BACT determination should include considerations of variances or other alternative standards an applicant could seek which are outside the scope of the PSD permitting process.

Comment No. 6.

SNCR was previously pilot tested at the Lehigh Cement plant in Mason City, Iowa. Based on the success of that test, SNCR was recently required as BACT in a prevention of significant deterioration ("PSD") permit issued to the company. Missouri also required SNCR in a "synthetic minor to avoid PSD" permit recently issued to Continental Cement near Hannibal, MO. Both projects create a strong presumption that SNCR technology is technically and economically viable as BACT.

Response

Neither Lehigh nor Continental currently operate SNCR at their respective facilities.

The comment notes that the Iowa cement plant performed a pilot test with SNCR on an operating kiln prior to agreeing to install it as a control technology. This step of verification is exactly what the use of an ICT testing and evaluation program provides. That it is necessary for cement plants in the U.S. to run pilot testing programs prior to installing SNCR does not support that SNCR is BACT. In fact, due to the variability of raw materials and operating conditions, a pilot test at one facility hardly demonstrates that SNCR is environmentally and technologically appropriate for all cement manufacturing facilities throughout the U.S.

Additionally, the Iowa plant's permit requires compliance with a NO_x emission limit of 2.85 pounds of NO_x per ton clinker. Holcim understands that compliance with the 2.85 pounds NO_x per ton clinker limit is the BACT requirement for the Iowa source. That is, beyond installing SNCR, the facility will not be required to operate SNCR unless it cannot achieve the BACT emission limit of 2.85 pounds NO_x per ton clinker. Based on this understanding of the situation, if the Iowa source is not required to operate the SNCR system continuously (e.g., as intermittent control), it cannot be considered BACT.

With MSC only, the Preliminary Determination requires Lee Island to achieve a NO_x emission limit of 2.80 pounds NO_x per ton clinker (after optimization), decreasing to 2.4 lb/ton upon commencement of the SNCR ICT program.

Similarly, the proposed use of SNCR at Continental Cement's Hannibal, Missouri proposed cement plant is likewise not relevant. As noted in the comment, Continental

Cement avoided permit review by the PSD program altogether. Control technologies that are beyond BACT have often been proposed to avoid the strict “top-down” review of the PSD program due to the perceived benefits of netting out, if at increased compliance risk. It should be noted, however, that Continental has not acted upon the permit which was issued in the fall of 2002, so no determination regarding the effectiveness of SNCR can be made.

Regarding the presumption that SNCR technology is technically and economically viable as BACT, as stated in the comment, it should be noted that SNCR was reviewed appropriately in the department’s “top-down” BACT analysis. SNCR was determined to be technically viable as BACT and it was the combination of environmental and economic impacts that eliminated it from further consideration.

The department’s actions were not inconsistent with the commenter’s presumption of technical and economic feasibility.

Comment No. 7.

ICT is generally reserved for first-time innovations and has been used in very few circumstances. For example, we are not aware of any PSD projects in region 7 since 1976, either approved by the region or states, which have made use of these provisions.

Response

The use of ICT in this matter is consistent with the regulations in 10 CSR 10-6.060 (8)(B)4. which states:

“4. An owner or operator to which this subsection applies may employ a system of innovative control technology, if the procedures specified in subsection (12)(E) of this rule are followed.”

Subsection (12)(E) of the rule outlines the regulatory requirements for ICT. The Preliminary Determination included a lengthy analysis of the Missouri ICT rule and its applicability to the Holcim permit². In this analysis, the department appropriately found that each element of the ICT rule was met by the application of SNCR at Lee Island.

In terms of prior use within the state, or region, Holcim refers to the Mississippi Lime Co. (MLCO) PSD construction permit (Permit No. 2002-02-026) issued in 2002. This PSD construction permit included the use of an ICT for NO_x control. In the department’s response to comments that accompanied the MLCO Final Determination, the department stated:

“Staged combustion air is expected to have slightly higher control efficiency than water/steam injection. In addition, water/steam injection is still considered experimental in nature and has potential energy and environmental impacts. Therefore, water/steam injection was not considered as BACT. **Instead, it was chosen as an innovative control**

² Preliminary Determination, pp 33-36.

technology. However, the BACT limit reflects the additional control expected from the innovative control technologies.”³ (Emphasis Added)

In the MLCO instance, the determination that a system of controls was ICT was made after the Preliminary Determination was published, and without as rigorous an accounting of the specific ICT rules as was presented in the Holcim Preliminary Determination.

This is a single example of ICT application within the region. It is relevant because 1) it is recent, 2) the proposed MLCO source is located in Ste. Genevieve County with Lee Island, and 3) the MLCO ICT was proposed for the control of NO_x, similar to Holcim’s proposal to use SNCR as ICT at Lee Island.

Comment No. 8.

Other NO_x technologies like SCR, which have only been applied to one cement kiln in the world seems a more likely candidate for ICT than SNCR.

Response

The controls required by state and Federal requirements for this construction permit are BACT. The use of an ICT was not a requirement from a regulatory/technology perspective, but was incorporated into the permit to provide further assurance that impacts to the St. Louis nonattainment area would be less than significant.

SCR was eliminated from the “top-down” BACT process due to its unproven, unavailable nature (technical infeasibility). The permit record is strongly supportive of this determination. See Response to Comment No. 138.

Comment No. 9.

We believe that approval by other states impacted by the source is an important feature of the ICT requirement. Therefore, approval by the Illinois governor should be obtained prior to permit issuance if Missouri decides to authorize ICT as part of its final permit decision.

Response

The Preliminary Determination included a request for the State of Illinois to review and comment on the specific application of ICT for NO_x control.

The State of Illinois comments, as provided in the March 29, 2004 letter from the Office of the Attorney General stated that

“We commend the Department and the Company for all of the effort expended to assure that emissions from the facility will comply with Missouri’s air pollution standards and will not further degrade air quality in Illinois.”

³ Comments and Responses on Mississippi Lime Company Prevention of Significant Determination (PSD) New Source Review Permit Application, p. 6.

The Illinois letter also included other comments regarding the Preliminary Determination, none of which indicated concern with the use of an ICT for NO_x control.

See Section 3 of this Response to Comments, which addresses additional comments provided by the State of Illinois.

Comment No. 10.

In conclusion, in order to exclude SNCR as BACT the permit record must clearly document that the technology is neither supportable from a technological or economical point of view.

Response

Holcim disagrees with the comment, to the extent that it infers that the only reasons to eliminate a technology as BACT are technical infeasibility or economics. The comment ignores a part of Step 4 of the “top-down” BACT review process, which requires an evaluation of a potential control technology’s energy, economic and collateral environmental impacts (New Source Review Workshop Manual, Draft, October 1990, p. B.26).

Holcim believes the permit record clearly documents that the SNCR technology is infeasible as BACT for NO_x. On November 20, 2002, Holcim submitted the document *Response to Preliminary Best Available Control Technology Determination* as a compilation of all information previously submitted to the APCP regarding the Lee Island BACT analysis. Note that this document is incorporated by reference in the Preliminary Determination (p. 55). The SNCR technology was extensively evaluated in the November 20, 2002 “top-down” BACT analysis and found to be infeasible as BACT for NO_x due to adverse economic, energy and environmental impacts. The Preliminary Determination and the record as a whole provide adequate support for the department’s BACT determination, and the department has provided a reasoned justification for its determination.

Comment No. 11.

We reserve our option to comment further and respond accordingly following the final permit decision.

Response

No response is required from Holcim because the regulatory comment period is determined by applicable state regulations.

2.2. BACT Averaging Times

Comment No. 12.

Based on the record, the averaging times established for the sulfur dioxide (“SO₂”), NO_x and carbon monoxide (“CO”) BACT emission limitations are not justified; both for

purposes of reasonable compliance verification and for comparison of technology limits to other portland cement PSD projects.

Response

Holcim disagrees with this comment. Ample information was submitted to the APCP to justify the proposed SO₂, NO_x, and CO BACT emissions limit averaging times. Although much the following emissions variability citations refer mainly to NO_x, as it has been the subject of substantial debate, similar emissions variability for SO₂ and CO has been anticipated by a potential vendor, as indicated by the proposed limits.

Twelve (12)-month rolling averages have been used in PSD permits that have recently been issued to cement kilns by Region 7 and other EPA regions. The 12-month rolling average will allow for an appropriate compliance demonstration period to an inspector during a surprise inspection. It will also allow for variabilities associated with the general cement kiln process, seasonal weather conditions, and product demand.

The original application and subsequent addenda have consistently included proposed annual average BACT emissions limits that are based on the raw materials, fuels, and control technologies to be used for each pollutant. In response to questions concerning the BACT analysis, Holcim submitted correspondence to the APCP on November 6, 2000 that characterized short-term NO_x variability as “very high” and “typical in a cement plant.” In response to further concerns regarding NO_x emissions, Holcim, in agreement with a potential vendor, formally agreed to reduce the guaranteed NO_x emissions rate on March 9, 2001. Based on the potential vendors guarantee, the March 9, 2001 letter qualified NO_x variability as “... due to the short-term variability in NO_x emissions from cement plants, Holnam has requested an annual averaging period to demonstrate compliance.” Also, during a meeting on November 13, 2001, Holcim submitted a report entitled NO_x Variability in Cement Kilns to the APCP. The report included a lengthy discussion on NO_x variability as well as figures contrasting the variability present in cement kilns and utility boilers. Finally, during a meeting on December 18, 2001, representatives of a potential vendor presented and discussed short-term emissions variability information with the APCP.

All of these documents are either directly incorporated by reference or cited in documents that are incorporated by reference into the Preliminary Determination. The November 6, 2000 correspondence and March 9, 2001 letter were cited in the November 20, 2002 submittal, “*Response to Preliminary Best Available Control Technology Determination.*” The November 13, 2001 report was included in the December 18, 2003 submittal, “*Best Available Control Technology Update – Selective Catalytic Reduction.*” A copy of the December 18, 2001 meeting presentation materials was included in the November 20, 2002 submittal.

By requiring compliance on a 12-month rolling average basis, the department will be able to ensure compliance on a monthly basis. That is, according to the Preliminary Determination, Holcim is required to demonstrate compliance with the 12-month rolling average emission limits for NO_x, SO₂, and CO on a monthly basis. As such, compliance verification will be enabled on a reasonable basis.

Other portland cement plant PSD limits were considered by the department as part of the case-by-case application of the “top-down” BACT review process (e.g., Ashgrove

Cement Chanute, Kansas; Monarch Cement, Humboldt, Kansas, Lehigh Cement, Union Bridge, Maryland).

Comment No. 13.

Currently, neither the permit application nor permit record adequately demonstrates the need for the longer annual averaging period.

Response

See Response to Comment No. 12.

Comment No. 14.

Averaging periods longer than 30-days are generally not supported by EPA.

Response

See Response to Comment No. 12.

The APCP and various EPA Regions have traditionally allowed the use of 12-month rolling averages, subject to: 1) documentation that short-term emissions variability warrants a long-term average and 2) worst-case modeling demonstrating that no violations occur for any applicable short-term national ambient air quality standard ("NAAQS") or increment (See EPA memorandum dated September 23, 1987 entitled "Review of State Implementation Plans and Revisions for Enforceability and Legal Sufficiency" and the January 25, 1995 "Guidance on Enforceability Requirements for Limiting Potential to Emit through SIP and §112 Rules and General Permits."). Based on the emissions variability information and modeling demonstrations submitted with and in support of the permit application, the 12-month rolling average emissions limits are appropriate.

Comment No. 15.

Since the annual BACT limits proposed in the draft Holcim PSD permit appear to be in the same ranges as those specified as 30-day rolling averages in other portland cement permits, we recommend that the averaging period for the Holcim permit should not exceed 30-days.

Response

See response to Comment Nos. 12. and 14. Emissions limits being guaranteed by system vendors are a site-specific function of the raw materials, fuels, and control technologies used for a given facility. Information related to how emissions were specifically estimated for this facility was supplied to the APCP in the August 1, 2000 submittal, "Prevention of Significant Deterioration and National Emission Standards for Hazardous Air Pollutants Preconstruction Approval Application Addendum No. 1", and the November 20, 2002 submittal, "Response to Preliminary Best Available Control Technology Determination."

There are also BACT limits found in many recently issued cement plant PSD permits that are based on 12-month rolling averages.

Comment No. 16.

If the adjustment from a 30-day to annual standard is similar to that observed for turbines, then the BACT limits in the draft Holcim permit may be higher than what other kilns with identical numerical BACT limits can meet based on the shorter 30-day averaging period.

Response

See Response to Comment No. 12. Holcim provided the department with a specific analysis of the differences between cement kilns and electrical utilities (NO_x Variability in Cement Kilns). This analysis showed clearly that no comparisons between cement kilns and electrical utilities can be made on the basis of short-term variability.

Comment No. 17.

If the department believes that a longer averaging period is necessary, then the permit record should clearly document the need for such period, including the underlying need and consideration of lower numerical limits for the longer averaging times.

Response

See Response to Comment No. 12. Ample information was submitted to the APCP to justify the proposed SO₂, NO_x, and CO BACT emissions limit averaging times. The permit incorporated these documents by reference. The permit record clearly contains all relevant materials supporting the Preliminary Determination.

2.3. NO_x BACT

Comment No. 18.

We have a number of comments concerning the NO_x BACT emission limitations.

Response

No response is required for this comment. Please refer to the responses to the following Comments No. 19 through 26.

Comment No. 19.

We also consider the projected \$3,833 per ton NO_x removed to be reasonable within the range of other add-on NO_x controls in Region 7 and across the country, even though we do not typically consider combined pollutants when considering BACT costs.

Response

While the projected cost per ton NO_x removed may be reasonable if considered alone, according to the New Source Review Manual, a BACT determination is made "... on a

case-by-case basis, taking into account energy, environmental, and economic impacts and other costs ...". In this case, SNCR was not eliminated on the basis of economics alone, but rather on the basis of other adverse environmental impacts.

With regard to the consideration of combined pollutants, as described in the New Source Review Manual, the impact of BACT for one pollutant on the emissions of one or more pollutants is typically considered when performing a "top-down" analysis (see Chapter B, Section IV.D.3.a. and b.).

Comment No. 20.

Unless the final permit record justifies a technology other than SNCR as BACT, we encourage the department to establish a limit of 2.4 pounds of NO_x per ton clinker limit (30-day rolling average) with additional, tighter seasonal controls as appropriate.

Response

The permit record adequately justifies a technology other than SNCR as BACT. Multistage combustion remains the top control technology not eliminated in the "top-down" BACT process. As the comment's request for a lower NO_x BACT limit is predicated on SNCR as BACT, no further response is necessary, although Holcim notes that the Preliminary Determination does require operation at an emission rate of 2.4 pounds of NO_x per ton clinker (on a 12-month rolling average basis) with the commencement of the SNCR ICT program, beginning no later than 24 months after commencing operations, and it also does include additional, tighter seasonal controls during the ozone season.

Comment No. 21.

An optimization period during which Holcim would have a higher limit, such as 2.8 pounds of NO_x per ton clinker (30-day rolling average) also appears acceptable as BACT.

Response

Holcim agrees that an optimization period is acceptable and appropriate. However, as discussed in Addendum No. 3, a potential vendor is requiring the higher initial limit to be set at 3.0 pounds of NO_x per ton clinker, annual average (i.e., 12-month rolling average). As compliance with NAAQS and PSD Class II increment standards have been demonstrated at the 3.0 pounds of NO_x per ton clinker, and Special Condition (5) of the Preliminary Determination is enforced from the start of operations, there is no ambient air quality reason to decrease the optimization period NO_x limit. As such, no change in the final determination is necessary.

Comment No. 22.

We recommend that BACT controls should be applied year-round.

Response

Holcim agrees with this comment and will operate BACT (MSC for NO_x) year-round. This comment supports Holcim's responses to other comments made by EPA, most notably regarding SNCR. It is the inability of SNCR to be ensured of operations at a high level on a year-round basis without producing a detached plume opacity problem that eliminates it from consideration as BACT.

Comment No. 23.

If the department ultimately eliminates SNCR as BACT on the basis of the combined cost of NO_x and CO, then the record should carefully document its rationale in light of past BACT determinations and the precedent this determination may have for future permitting actions.

Response

SNCR was not eliminated on the basis of incremental cost alone but rather on the combination of economics and other adverse environmental impacts. See Response to Comment No. 4.

Comment No. 24.

If more than one NO_x limit is established for initial and on-going operations, to allow for a period of optimization of the multi-stage combustor, EPA recommends that the NO_x limit should be reset when the new, lower standard takes over.

Response

Holcim agrees with this comment. On March 29, 2004, Holcim provided a comment to the APCP detailing concerns with the how 12-month rolling averages are calculated, especially in the first months of operation, or as cited by the commenter, when a new limit takes over. For the first 12 months of operations, Holcim defers to the March 29, 2004 comment. For emission limit changes after the first 12 months of operations, Holcim agrees with the comment above that a new 12-month averaging period be established.

Comment No. 25.

To ensure that Holcim optimizes its cement manufacturing process and air pollution controls as expeditiously as possible, while minimizing emissions, we encourage the department to include a rigorous technology update plan in the permit, similar to that required for the Kansas City Power and Light Hawthorn PSD permit.

Response

The Kansas City Power and Light (KCPL) Hawthorn PSD permit technology update plan essentially provides a documented "out." That is, by following the update provisions during the testing program, KCPL is provided a relaxation of its approved emission limits. This is not analogous to the situation at Lee Island where the optimization period for MSC and the subsequent ICT testing and evaluation program will not lead to any relaxation of emission limits.

Special Condition (3)(A)5. of the Preliminary Determination requires Holcim to provide the ICT testing and evaluation protocol for department approval prior to commencing the evaluation. Holcim expects that reporting requirements similar to those in the KCPL plan will be a part of the final ICT testing and evaluation protocol, approved by the department.

Comment No. 26.

If the department anticipates that special provisions may be necessary to address the potential for adverse opacity, we recommend including those procedures in the final permit irrespective of what NO_x BACT technology is selected.

Response

With the current BACT analysis conclusions, the ICT specifications encompass the only special provision necessary to address the potential for adverse opacity. The evaluation and testing of SNCR as an ICT will not necessitate the development of an alternative opacity standard, or other special provision for opacity,

The APCP developed the Preliminary Determination with the use of SNCR as ICT because SNCR has not been adequately demonstrated under the full regulatory requirements applicable to cement manufacturing facilities operating in the United States. As described in the “top-down” BACT analysis, SNCR cannot be considered as BACT from a practical standpoint because of the risks associated with the development of a detached plume. Conversely, Europe can and has used SNCR extensively for the control of NO_x emissions from cement kilns because they do not have regulatory limits for opacity (i.e., opacity is not a pollutant of concern).

While Europe does limit particulate emissions, compliance is solely determined on an in-stack basis through particulate testing and opacity or other monitoring devices. Accordingly, there is no concern to plume reactions that occur with post-stack emissions (i.e., a detached plume). Conversely, regulatory requirements in the United States dictate compliance with emission limits both measured in the stack and, for opacity, post stack. Because of the difference in approach to measuring opacity, SNCR cannot be considered as environmentally acceptable if the uncontrolled use of SNCR will result in violations of the opacity standard due to detached plume formation.

The opacity standard is part of the Missouri SIP and is also included in the PC MACT rule. The APCP and EPA could issue exceptions to the state and federal opacity requirements. However, such exceptions would require future rulemakings, necessitating the appropriate public notices and hearings, and approval of an exception is not guaranteed. Until such a time as the opacity exceptions are promulgated or a finding is made on opacity not being a basis for environmental protection, MDNR must maintain the position that an opacity violation is adverse to environmental protection and contrary to law.

Opacity, in the form of a detached plume, becomes an issue with the operation of SNCR during certain atmospheric conditions (cool weather). In addition, ground level ozone formation occurs only during another certain set of atmospheric conditions (warm weather). In consideration of the different atmospheric chemistries that result in ozone and detached plume formation, Holcim and the APCP felt that seasonal usage of SNCR

could be compatible with the concept of maximizing NO_x reduction when the ozone formation would be problematic and reducing the use of SNCR when detached plume formation issues would occur. Both Holcim and the APCP felt that this use of an advanced technology that has not been effectively demonstrated in the United States due to the risk of detached plume formation, but has been shown to provide NO_x reduction elsewhere, does meet the criteria for ICT. Additionally, it will not necessitate the development of an alternative opacity standard, or other special provision for opacity, by both EPA and the APCP, which is beyond the scope and authority of the PSD permitting process. With the current BACT analysis conclusions, the ICT specifications encompass the only special provision necessary to address the potential for adverse opacity.

2.4. PM₁₀ and SO₂ Increment Consumption Baseline Areas

Comment No. 27.

EPA believes that MDNR has performed the Holcim Class I and II analysis consistent with their interpretation of state rules and that this issue is not an impediment to final PSD permit issuance.

Response

Holcim agrees with the comment.

Comment No. 28.

If subsequent modeling shows that PM₁₀ or SO₂ concentrations exceed the Class I or II increments as a result of Holcim's operations, then additional mitigation will be required at that time.

Response

Holcim disagrees with the comment to the extent that the context of the comment was related to the potential for the department or EPA to re-interpret state rules to redefine increment tracking and subsequent consumption on a state-wide basis. Should this occur in the future, it would not be appropriate to seek relief from one source that received a construction permit based upon the APCP-supplied increment inventory. Rather, such a change would require a SIP process be initiated and would have to include all sources in the area where a potential concern is required. See Response to Comment No. 81.

2.5. Conditions That Validate Modeling Results

Comment No. 29.

The number and type of vehicles modeled in the modeling demonstration should be part of the permit.

Response

Holcim disagrees with the comment. The permit application is incorporated into the permit by reference. Changes in operation that would affect the modeling demonstration requires review and approval by the department. The department included the appropriate conditions in the Preliminary Determination to protect ambient air quality. Further conditions are not necessary.

Comment No. 30.

The Burlington Northern and Santa Fe (“BNSF”) railway that goes through the eastern part of the facility is ambient air and appears not to have been modeled. If the areas [sic] is not fenced or public access is not otherwise restricted, then the entire plant site would have to be modeled as though the area is ambient air.

Response

A drawing indicating the current plant property boundary was submitted with Addendum No. 3 on May 31, 2002, which was incorporated by reference into the Preliminary Determination. As discussed in Addendum No. 3, access to areas within the identified property boundary will be restricted to preclude public access.

Comment No. 31.

We recommend that the department supplement the public record and establish the appropriate conditions as necessary to assure that the assumptions used in the model are properly reflected in the permit.

Response

The permit application is incorporated into the permit by reference. Changes in operation that would affect the modeling demonstration require review and approval by the department. The department included the appropriate conditions in the Preliminary Determination to protect ambient air quality.

2.6. Initial Compliance Testing for PM₁₀ Point Sources

Comment No. 32.

The permit does not appear to require initial compliance verification testing for PM₁₀ point sources.

Response

Holcim agrees. However, initial compliance testing is required under New Source Performance Standards (“NSPS”) Subparts Y and OOO, and PC MACT Subpart LLL. Special conditions (2)(A)1.C. and D. of the Preliminary Determination specifically limit PM₁₀ emissions from the in-line kiln/raw mill system, coal mill system, and clinker cooler. In addition, special condition (2)(A)1.B. limits particulate matter emissions from all other point sources at the facility. To verify compliance with special conditions (2)(A)1.C. and D., Holcim proposes the addition of a special condition to require compliance testing of the in-line kiln/raw mill system, coal mill system, and clinker cooler.

To verify compliance with special condition (2)(A)1.B., Holcim proposes the addition of a special condition to require testing of up to 10% of the baghouse-controlled point sources at the facility.

Holcim further proposes the addition of a special condition that requires all testing specified in the Preliminary Determination to be conducted within 60 days of achieving maximum production and within 180 days after startup, unless a request for additional time is submitted and approved by the APCP.

Comment No. 33.

Since compliance with the PSD permit is determined independently from the maximum achievable control technology ("MACT") [requirements] and the Title V operating permit, all testing should occur within a reasonable period of time following startup of the plant. We recommend a period of between 60 days after achieving maximum production and 180 calendar days following startup.

Response

Holcim agrees. All testing specified in the Preliminary Determination, as well as testing required under the NESHAPs and NSPS requirements will be conducted within 60 days of achieving maximum production and within 180 days after startup, unless a request for additional time is submitted and approved by the APCP.

Comment No. 34.

In addition, we recommend that for any testing of PM₁₀, that the permit explicitly require collection of the filterable and condensable fractions pursuant to approved test methods such as those found in 40 C.F.R. Part 51, Appendix M, Methods 201, 201A and 202.

Response

Holcim does not believe that a change to the permit language is necessary. The Preliminary Determination does require testing in accordance with approved test methods. Special condition (1)(G) of the Preliminary Determination requires that Holcim "use only the appropriate test methods identified in 10 CSR 10-6.030, 'Sampling Methods for Air Pollution Sources'." The cited regulation requires PM₁₀ testing to be done in accordance with the methods specified in 40 C.F.R. Part 51, Appendix M, unless an alternative method is approved by the APCP.

Comment No. 35.

If testing is deferred or delayed beyond the typical testing period following startup of the plant, the record should provide a clear basis for doing so.

Response

All testing specified in the Preliminary Determination, as well as testing required under the NESHAPs and NSPS requirements will be conducted within 60 days of achieving maximum production and within 180 days after startup, unless a request for additional time is submitted and approved by the APCP.

Holcim does not anticipate the need for a deferral or delay to the typical testing period following startup. However, if circumstances occur after startup of the plant that warrant a deferral or delay of testing beyond the regulatory timeframe, Holcim will make the appropriate request at that time. The justification, or basis, for the deferral or delay would be included in such a request.

2.7. Ongoing Compliance Verification for PM₁₀ Point Sources

Comment No. 36.

While this approach (submit an operating and maintenance (“O&M”) Plan describing how delta P measurements will be used to provide compliance assurance) may be a useful supplement for baghouses not otherwise required to monitor under the MACT standard, it appears to deviate substantially from the monitoring that will be required under the MACT standard for the in-line kiln and raw mill, the clinker cooler, raw or finish mills, and raw material dryers.

Response

Holcim agrees that the requirements specified in special conditions (2)(A)1.E.(I) through (V) do deviate substantially from the provisions required under NESHAPs and provided a comment to the APCP on March 29, 2004 requesting that these special conditions be removed from the Preliminary Determination. The requirements specified in these special conditions will be addressed in the O&M plan required by Special Condition (1)(A). Most baghouses to be installed at the facility will be subject to PC MACT. For consistency, ongoing compliance assurance measures for baghouses should be similar whether they are subject to PC MACT or another regulatory requirement. Holcim has therefore elected to include point sources not regulated under the PC MACT rule in the O&M plan. Under the O&M plan, the same periodic monitoring (i.e., periodic visible emissions monitoring) would be conducted for these additional sources as those regulated under the PC MACT rule.

Comment No. 37.

To assure that the terms of the PSD permit can be independently verified prior to issuance of the Title V permit or the required MACT compliance demonstration, we recommend that MACT-compliant monitoring be specified directly in the PSD permit for all emission units with a monitoring requirement under the MACT.

Response

Holcim does not agree with this comment. The facility will be required to demonstrate compliance with PC MACT as specified in the rule. As with other regulations, the PC MACT rule is subject to periodic changes. If specified in the PSD permit, any periodic changes would potentially require a permit revision to correct contradictory or duplicative requirements. On the other hand, Title V permits can and often do include a regurgitation of the applicable requirements. Periodic regulatory changes can and are accounted for under the Title V process (e.g., update requirements at time of renewal). While this level of detail is typical for a Title V permit, it is simply not necessary for a PSD permit.

Comment No. 38.

We also encourage installation, operation, maintenance, calibration, and certification of this monitoring equipment within 60 days of the date the plant achieves its maximum production, but no later than 180 days after the startup of the cement production operations.

Response

The installation, operation, maintenance, calibration, and certification of monitoring and related equipment is required under the applicable NESHAP and NSPS regulations. The applicable timeframe specified under both the NESHAP and NSPS regulations is within 60 days of achieving maximum production and within 180 days after startup. Since these are requirements independent of their inclusion in the PSD permit, there is no need for them to be specified in the permit.

Comment No. 39.

The monitoring specified in the permit should include continuous opacity monitors (“COM”), bag house leak detector systems, visible emission assessments, and consideration of PS-11 certified continuous particulate matter emission monitors (“PM-CEMS”) for all equipment required to monitor under the MACT.

Response

The PC MACT rule requires specific monitoring requirements. Holcim will comply with all of the applicable requirements as specified in the rule and will maintain sufficient records to demonstrate compliance with each requirement. In addition, Holcim will maintain the appropriate on-site records to demonstrate compliance with other permit specific requirements as listed in the PSD permit. Details of compliance assurance activities, such as monitoring and recordkeeping requirements, are typically included in the Title V permit, which must be applied for within 12 months after startup of the facility.

Comment No. 40.

For any remaining baghouses for which a pressure drop monitoring system is retained, the record should clarify how one measurement every 24-hours is sufficient to provide a reasonable assurance of compliance on an on-going basis.

Response

See response to Comment No. 36. Periodic monitoring of all baghouses (i.e., those subject to PC MACT, NSPS, and others) will be specified in the O&M plan to demonstrate compliance on an ongoing basis. Holcim’s position is that no pressure drop monitoring should be retained as it is inconsistent with the requirements of PC MACT.

Comment No. 41.

In addition, we recommend that the language in Condition (2)(A)1.E.(IV) concerning “operating pressure drop within the design conditions specified in the manufacturer’s performance warranty” be removed.

Response

Holcim agrees with this comment.

Comment No. 42.

We recommend that the permit concentrate on the pressure drop range measured during initial compliance and establish appropriate bounds for which operation would continue to be in compliance with standards.

Response

See response to Comment No. 36. Periodic visible emissions monitoring of all baghouses (i.e., those subject to PC MACT, NSPS, and others) will be specified in the O&M plan to demonstrate compliance on an ongoing basis.

Comment No. 43.

Condition (2)(A)5.D. contemplates a process where the company will submit a plan if the moisture content of the rock, on two successive occasions, is less than 1.5% moisture. If there is a high probability this will occur, we believe the permit should incorporate any necessary contingency measures now rather than later; especially if an exceedance of the moisture standard is linked to a NAAQS or increment problem. We recommend that the permit should anticipate the need for additional control and specify the measures that Holcim will have to undertake if the moisture content of the rock is less than is needed to protect the air quality analysis.

Response

Holcim disagrees with the comment. Based on extensive raw material investigations, there is not a high probability this situation (the moisture content of the rock, on two successive occasions, is less than 1.5% moisture) will occur. As such, the permit does not need to incorporate any contingency measures.

Should the unexpected occur, and the rock moisture content is lower than 1.5% as tested on two successive occasions, Holcim will submit a corrective action plan, specifically tailored to the specific characteristics of operation. Should this occur the results of the plan would be incorporated into the Part 70 Operating Permit (Title V) application Holcim is required to submit within 12 months of commencing operations. At that time, Holcim and the APCP will have the benefit of a number of months of operation to determine the need for such a corrective action plan as the initial Title V application is reviewed and Title V permit issued.

2.8. Summer Time NO_x Mitigation Plan

Comment No. 44.

We recommend that the department supplement the record with the details of the origin of each emission reduction credit (“ERC”) transaction, including the originating company’s request to bank surplus emissions, their authorization to shift ERC to Holcim, and Holcim’s request to use such credits.

Response

Holcim does not disagree with this comment, to the extent that all information relating to the ERC transaction details are part of a “public record.” Holcim does disagree with the comment to the extent which these details are required in the “permit record” (e.g., permit conditions, technical review document, and public notice documentation). The Preliminary Determination included information relating to the origin of the ERCs (Preliminary Determination, p. 50, footnote 62). The ERC transactions were made in accordance with 10 CSR 10-6.410 *Emissions Banking and Trading*, and were reviewed and approved by the department. The record of these transactions includes all information requested by the commenter.

Compliance with 10 CSR 10-6.410 is also the requirement for sources locating in nonattainment areas where ERC offsets are mandatory. Holcim’s permit and/or permit record for an attainment area source should not require or include more information than a nonattainment NSR source.

Comment No. 45.

The record is silent on the inter-pollutant trading of volatile organic compound (“VOC”) for NO_x emissions. Did the department perform an analysis as part of its significance determination to show that VOC for NO_x trades result in the same air quality benefit for ozone? If so, this analysis should be included in the public record. If not, the department should clarify in the “response to comments” how VOC reductions accomplish the same level of ozone reduction as NO_x in St. Louis. Until either EPA or MDNR establish a written policy or rule that details how inter-pollutant trades are best accomplished, is it prudent to document the record on the procedures used in this case.

Response

Holcim is not aware of a department study on the relative effects of VOC or NO_x emissions on ozone levels in St. Louis, although an analysis may have been completed as part of the SIP attainment demonstration. However, during the permit review process, the department informed Holcim that retiring ERCs of each pollutant on an interchangeable basis was acceptable to the department. From Holcim’s perspective, there is a direct relationship between VOC and NO_x and the two are interchangeable.

Ozone is formed from VOC and NO_x emissions in the presence of sunlight. Whether controlling VOC and/or NO_x is more effective at reducing ozone concentrations varies by location and by day. Generally, ozone formation is more VOC-limited in urban areas and more NO_x-limited in rural areas, which explains the current ozone control programs

that combine regional NO_x controls (e.g., NO_x SIP Call and Interstate Air Quality Rule ["IAQR"]) with local urban area VOC controls (RFG, vapor recovery).

VOC controls within the St. Louis urban area are likely just as effective at reducing ozone in St. Louis as NO_x controls. The use of VOC ERCs as a substitute for NO_x ERCs is a technically valid method of controlling regional air quality. No change in the final permit is required.

Comment No. 46.

We recommend that Condition (5) in the permit, which describes the use of ERCs towards meeting the summer time NO_x limit, include a statement that any ERC used should meet the viability standards of the state's approved banking and trading rule found at 10 CSR 10-6.410.

Response

Holcim does not disagree with the comment. It is understood that any ERC retirements would have to follow the Emissions Banking and Trading rules of 10 CSR 10-6.410.

Comment No. 47.

We recommend that the permit should include an enforceable short-term limit during the ozone season or that MDNR should provide further details in its "response to comments" document as to why such a limit is unnecessary.

Response

Holcim disagrees with the comment. The ozone modeling of the Lee Island facility referenced was a sensitivity analysis completed by the department, not a permit demonstration. It is not appropriate to assign a daily potential to emit ("PTE") from the result of this sensitivity analysis to a source undergoing a PSD review.

The department's only previous use of the "direct downwind scenario" (i.e., Franklin County analysis) as a sensitivity test for a PSD permit review also did not result in a daily limit for NO_x emissions⁴.

The ozone modeling of the Holcim Lee Island facility was based on the St. Louis 1-hour ozone SIP July 1991 and July 1995 photochemical modeling databases. The emission inventories were developed following EPA's guidance for ozone SIP modeling (EPA, 1991). When Holcim was first asked to address ozone issues, an analysis was completed where the Lee Island NO_x emissions, using a much larger emissions rate than finally used in the permit (~3,000 tons per "ozone period" versus 1,622 – 1,822 tons per "ozone period" in the Preliminary Determination) were added to the St. Louis SIP modeling databases and the same attainment demonstration analysis was performed as

⁴ Mississippi Lime Permit No. 2002-02-026.

done in the EPA-approved St. Louis ozone SIP. Holcim found that the addition of the Lee Island facility did not affect the St. Louis ozone attainment demonstration⁵.

When the department modeled the effects of Lee Island's NO_x emissions on ozone concentrations in St. Louis in the sensitivity analysis, it followed the same EPA emissions guidance as used for all other sources in the greater St. Louis area (EPA, 1991), with the exception of the Lee Island source location, which was moved from Ste. Genevieve County and placed in a location directly upwind of the St. Louis urban area in an effort to create the "worst-case" emissions/meteorological scenario for a conservative analysis.

The source inventories are based on average (quarterly, at best) emissions rates from other facilities in the area. Vehicular traffic sources are assumed to be a typical (i.e., average) weekday level. With these "average" inputs, it is inappropriate to use the outputs of the model, which are already beyond the limit of the model's accuracy, to determine strict "daily" requirements for a single source.

SIP modeling demonstrations approved by EPA have not resulted in sources being restricted on a daily basis to the level of emissions modeled in the demonstrations. The sensitivity analysis completed for this construction permit should not result in stricter conditions on a single source than those placed on sources in other regional planning/approval processes.

Additionally, Missouri state regulations (e.g., NO_x reasonable available control technology ["RACT"] rule) for sources located in nonattainment areas also do not require a daily emission limit for those sources.

The project has been evaluated according to, and beyond, the PSD program requirements and insignificant impacts to St. Louis ozone concentrations have been demonstrated. No change in the final permit is required.

2.9. SO₂ BACT

Comment No. 48.

Page 28 of the fact sheet notes that wet lime scrubbing was eliminated as BACT based on its adverse incremental costs, but provides little justification beyond that provided in the application. While we generally concur that a \$13,225 per ton incremental cost is high, the permit record does not clearly distinguish whether these costs are real or perceived.

Response

The incremental costs of the wet lime scrubber were included and described in the November 20, 2002 submittal, *Response to Preliminary Best Available Control Technology Determination*, which is included by reference in the Preliminary Determination. The incremental costs are real, and are significantly influenced by the

⁵ "Estimation of the Impacts of the Proposed Holnam Lee Island Cement Facility in Ste. Genevieve County Missouri on Ozone Attainment and the Draft St. Louis SIP Ozone Attainment Demonstration." ENVIRON International Corporation, Novato, California. May 8, 2001.

cost of gas-reheat (see response to Comment No. 49) and related infrastructure, and are clearly supported by the permit record.

The cost of \$13,225 per ton of incremental cost exceeds the adverse economic impact level, as determined by the APCP.

Comment No. 49.

We encourage the department to supplement the permit record in consideration of the questions raised with regard to SO₂ BACT. If the department has already evaluated these options but has not included as part of the permit record, we encourage you to provide in the "response to comments" document. However, if these factors have not been evaluated, then we recommend that the department take a fresh look to determine if other options are feasible.

- A. Are there other acceptable design alternatives which would minimize or eliminate the need for gas reheat?
- B. Is reheat required during all periods of operation, or only those times when ambient conditions cool the exhaust gases below their acid dew point?
- C. If less gas is required because reheat is not necessary at all times, would there be sufficient quantities of interruptible or firm-supply natural gas available closer to the plant?
- D. Is it necessary for Holcim to have a non-interruptible supply of natural gas?
- E. If sufficient quantities of gas are available on an interruptible basis, is it possible to operate SO₂ controls at least part of the time in a manner that is cost feasible?
- F. Is there a sufficient volume of interruptible gas available?
- G. If so, what is the frequency of curtailment in the Ste. Genevieve area?
- H. What percent of the operating time would the scrubber be unavailable as a result of gas curtailment?
- I. Are there any other seasonal considerations in the operation of the scrubber?
- J. If gas is readily available in the summer time or reheat is unnecessary, could the scrubber be operated during those periods assuming costs prove reasonable?
- K. If gas is curtailed in winter and reheat is necessary, is it possible to curtail operation of the scrubber during those limited periods?
- L. Is it possible to design special, corrosion-resistant duct work to resist the effects of the acid condensation?

Response

Holcim believes that the record is complete regarding the SO₂ BACT determination. This wet lime scrubber ("WLS") was thoroughly evaluated in the department's analysis. An evaluation of alternative fuels and process modifications that could be utilized to reheat the WLS exhaust gases was submitted to the APCP in a letter dated February 19, 2003. This letter was incorporated by reference in the Preliminary Determination.

As presented in the letter, no alternative fuels or process modifications can be utilized to reheat the exhaust gases. Also, as discussed in the letter, reheating of the exhaust gases is required on a continuous basis to: 1) prevent acidic corrosion within the system (i.e., keep the temperature above the dew point); and 2) increase plume buoyancy and dispersion to minimizing localized, out-of-stack acid gas deposition that will result in corrosion to process equipment, structural supports, buildings, and vehicles as well as

localized impacts to plants, soils and watersheds. In addition, the use of special equipment has not been proven to alleviate the associated corrosion problems.

Holcim extensively researched the availability of natural gas to the Lee Island facility. The research resulted in a determination that the closest adequate supply of natural gas is in Cape Girardeau, Missouri. In the course of the research, Holcim did not distinguish between interruptible and non-interruptible supplies; all supplies closer are “sold out” of either type of supply.

Even though it is not possible to secure natural gas on a part-time (interruptible) basis, operation of a WLS or any other emissions control system as BACT on a part-time basis is not representative of the strictures of the BACT process under PSD. Control technologies selected as BACT are required to be in use at all times the associated process equipment is in operation. The only exception to this rule is during periods of malfunction of the control technology, which, according to the definition of malfunction, would not include the “not reasonably preventable” curtailment of natural gas.

2.10. Continuous Emission Monitoring (CEMS)

Comment No. 50.

We concur with the selection of continuous emission monitoring equipment.

Response

No response is required to this comment.

Comment No. 51.

The permit should make clear that the measurement “system” for each pollutant is comprised of the concentration monitor, a diluent correction monitor (%O₂ or %CO₂) as necessary, a flow measurement monitor, any moisture correction device (to assure consistent measurement basis), a measurement system for clinker production and an automated data acquisition and handling system.

Response

Holcim does not disagree with this comment.

Comment No. 52.

It is unclear when the CEMS must be installed, operational, and quality assured, and to which performance specifications the monitors must [sic] certified.

Response

The timeframes of CEMS requirements detailed in the Preliminary Determination can be broken down into two distinct groups. The first group consists of those with timeframes specified and required by state and/or federal regulations (i.e., total hydrocarbon [“THC”] CEMS required under 40 C.F.R. Part 63, Subpart LLL). All CEMS included in the first

group have the requisite installation, operation, and quality assurance criteria as specified in the corresponding state and/or federal regulation.

The second group consists of those with timeframes that are solely specified and required by the Preliminary Determination. The associated CEMS averaging times identified in the Preliminary Determination for the second group ranges from 3-hour to 12-month rolling averages. The logical combination of short-term and long-term emissions limits, as stipulated in the Preliminary Determination, dictate that all CEMS within the second group be installed and operational upon startup of the associated equipment. In addition, as discussed under the Response to Comment No. 53, CEMS will be designed to meet the specifications of 40 C.F.R. Part 60.

Finally, note that timeframes specified and required in the second group will, if more stringent, take precedence over the timeframes specified and required by the first group.

Comment No. 53.

It would be beneficial for the permit to reference these requirements or some other peer-reviewed voluntary consensus standard as a permit condition:

- A. For example, SO₂, NO_x and CO CEMS are generally designed to meet Performance Specifications 2, 3, and 4 in 40 C.F.R. Part 60, Appendix B; even though the units at Holcim are not subject to the NSPS for these standards
- B. In addition, mass measurement systems, which include the addition of a flow meter, are generally designed to meet Performance Specification 6.

Response

Holcim does not disagree with the comment, but notes that the specific requirements of the monitors are not necessary to be contained in the final permit. These requirements were noted in the permit application, which is incorporated into the permit by reference.

Comment No. 54.

The permit should specify when the monitors must be operational and provide quality assured data.

Response

Holcim does not disagree with the comment. The requirements are understood, and can be incorporated into the final permit should the department determine it is appropriate to do so. Also See Response to Comment No. 52.

Comment No. 55.

Since compliance with the BACT standards is determined independent from Title V permitting, we encourage the department to include the critical CEMS benchmarks, or similar rule references, in the final PSD permit.

Response

Holcim does not disagree with the comment. The requirements are understood, and can be incorporated into the final permit should the department determine it is appropriate to do so.

Comment No. 56.

If the monitoring requirements are deferred or otherwise delayed past the typical 60-180 day period following startup, then the record should clearly provide the justification for doing so.

Response

Holcim does not anticipate the need for a deferral or delay to the typical testing period following startup. However, if circumstances occur after startup of the plant that warrant a deferral or delay of testing beyond the regulatory timeframe, Holcim will make the appropriate request at that time. If such a request is made, the justification, or basis, for the deferral or delay will be included in the request.

2.11. CO BACT

Comment No. 57.

The 6.0# CO per ton clinker, 12-month rolling average, BACT limit proposed in Condition (2)(D) appears to be very high compared to the recently issued CO BACT limit for Lehigh Cement in Mason City. The record does not clearly support why the Holcim limit would need to be 62% higher than a recently permitted project with similar NO_x controls.

Response

Holcim disagrees with this comment as we believe the record is clear on this issue. As described in the November 20, 2002 submittal, *Response to Preliminary Best Available Control Technology Determination*, CO emissions from cement manufacturing operations are a function of the *site-specific* raw materials, fuels, and NO_x control strategies used at an individual facility. For the proposed Lee Island emissions limit, CO is due to combustion (e.g., the MSC NO_x control strategy) and raw materials. CO emissions at other facilities may vary significantly from Lee Island, depending upon the characteristics of their raw materials and fuels as well as the employed NO_x control strategy.

Comment No. 58.

We believe that the CO BACT limit should be set in consideration of a 30-day average, unless the record clearly establishes the need for a longer averaging time.

Response

Holcim disagrees with the comment. See Responses to Comments No. 12 and 14.

2.12. Short Term SO₂ NAAQS-Based Emission Limits

Comment No. 59.

We encourage the department to either provide for adequate public review for this new information or explain the rationale for the change in the “response to comments” document and why the public would not benefit from further review.

Response

Holcim disagrees with the comment that additional public review is necessary.

During the public comment period, Holcim submitted a comment requesting an increase in the 3-hour and 24-hour SO₂ emission rate limits contained in their Preliminary Determination. As 24-hour SO₂ emission rates are relevant to visibility demonstrations in Class I areas, on March 29, 2004, we provided the Federal Land Manager (“FLM”) with a revised Class I visibility analysis for Mingo National Wildlife Refuge (“Mingo”).

As noted in our comment letters to both the FLM and MDNR, the total annual emissions of SO₂ will not increase with this comment. Holcim must still demonstrate compliance with the BACT-determined emission rate of 1.26 pounds of SO₂ per ton of clinker on a 12-month rolling average basis. On a short-term basis, inherent process variability due to random fluctuations in fuel and raw material chemical and physical properties will cause emissions to deviate from the long-term average emission rate. The operational plan of the facility will not change as a result of this comment, nor will the control technology requirements be affected.

In making the comment, Holcim supplied modeling demonstrations showing compliance with Class I and Class II PSD increments (for 3-hour and 24-hour SO₂) and supplied a revised visibility analysis. The conclusions of the modeling demonstrations were identical to those included in the public review, are consistent with the Notice of Public Hearing description that accompanied the draft permit, and do not change any of the findings of the department’s technical review. As such, there is no need for further public review.

2.13. CALPUFF Modeling

Comment No. 60.

We generally support the approach outlined in Condition (4)(E) requiring additional CALPUFF modeling.

Response

Holcim has previously supplied the department with a comment requesting removal of Condition (4)(E) from the permit on the basis that it is not a regulatory requirement to perform additional modeling when an approved guideline model, following an approved department protocol was used to complete the preconstruction modeling requirements. Holcim remains committed to supplying the information as outlined in the Preliminary

Determination, but feels it is inappropriate to include these requirements in a construction permit.

Comment No. 61.

We also agree with the general approach for mitigating any adverse impacts if the modeling shows concentrations above the NAAQS and increment standards.

Response

No response is required for this comment.

Comment No. 62.

It is unclear if Holcim must submit its mitigation plan as part of the modeling submission or at some other time.

Response

Holcim agrees to provide any mitigation plan, if required, as part of the modeling submission. This does not require a change in the final determination, as Holcim has previously commented (March 12, 2004) that the CALPUFF requirements are “extra-regulatory” and should be removed in light of preliminary modeling results that show no concern for compliance. Holcim remains committed to providing the information as required in the Preliminary Determination, but disagrees with the appropriateness of requiring conditions that are not consistent with regulatory requirements in a construction permit.

Comment No. 63.

If PM₁₀ concentrations predicted by the CALPUFF model are above the applicable air quality or increment standards, then any mitigation should be put in place prior to the date Holcim begins operations at the Lee Island site.

Response

Holcim remains committed to providing the CALPUFF modeling information as required in the Preliminary Determination, but disagrees with the appropriateness of requiring conditions that are not consistent with regulatory requirements in a construction permit. See Response to Comment No. 62.

Comment No. 64.

We recommend additional milestones for any dispute resolution that might be necessary along with a time frame during which the department will make its final decision.

Response

Holcim disagrees with this comment. It is not necessary to add additional milestones for dispute resolution in the final permit. Any disputes will be addressed according to applicable regulatory requirements.

Comment No. 65.

It is also unclear how the CALPUFF model results might impact the final Class I analysis. It is possible that Holcim and MDNR may have to re-perform the Class I impact analysis to factor in the on-site meteorology.

Response

Holcim disagrees with this comment. The emissions from Lee Island of most concern for the Class I area analysis are SO₂ and NO_x because they have the potential to affect the SO₂ PSD concentrations increments, visibility and deposition. More importantly, these emissions are released from the kiln and coal mill through elevated stacks that are approximately 154 and 142 m high, respectively. These emissions have upward momentum and are hot and buoyant so the effective stack height will be even higher. Thus, the transport of these emissions would be governed by the upper-level winds, not surface winds.

The PM₁₀ emissions are of less interest because they are emitted at a lower rate, from lower stacks, and will deposit out as they travel over 100 km to the closest Class I Area (Mingo). This is reflected in the Class I area analysis in which the PM₁₀ impacts of Lee Island at Mingo were well below the single source PM₁₀ Significant Impact Levels ("SIL").

For the Class I area modeling of 1990, 1992 and 1996, the upper-level winds were defined by hourly MM5/MM4 model output and are therefore much better represented than if observed twice daily upper-air meteorological observations were used. The on-site surface meteorological observations would have **no effect** on the upper-level winds (especially when these site monitors were located to measure surface drainage flows) and consequently would not affect the Class I area modeling analysis.

Comment No. 66.

Since it is possible that the FLM may recommend additional mitigation, those recommendations should be considered before the state issues its final permit recommendation.

Response

Holcim disagrees with this comment. See the response to Comment No. 65. The Class I modeling demonstration would not be influenced by the availability of site meteorological data, especially when those site monitors were specifically located to measure surface (i.e., 10-m) drainage flows.

As such, the completion of the CALPUFF modeling will not require a new Class I assessment, and therefore will not require further review by the FLM.

Comment No. 67.

If the FLM is unable to provide their recommendations prior to the close of the public comment period, we recommend that the state either require the necessary mitigation on

its own to meet the 0.005 kg/ha/yr guideline, or continue to work with the FLM and re-open the PSD permit as necessary.

Response

The FLM provided the APCP with comments prior to the close of the public comment period. The FLM comments did not recommend any changes in the permit related to acid deposition. As the FLM is the authority charged with reviewing sulfur and nitrogen deposition in Class I areas, and they have not expressed concern over sulfur and nitrogen deposition, nor required additional mitigation, no change is required in the final permit. Responses to the FLM's comments are addressed in Section 4 of this Response to Comments.

The 0.005 and 0.010 kg/ha/yr Deposition Analysis Thresholds (DATs) are not guidelines or standards, rather they are thresholds that, if exceeded, the FLM examines the impacts on a case-by-case basis. They are designed to provide protection to Class I areas that are sensitive to acid (sulfur and/or nitrogen) deposition. Sensitive Class I areas are typically high elevation lakes with little buffering capacity. The Mingo Class I area is a low elevation forested swamp with much more buffering capacity than the high elevation lakes that the DATs were designed to protect. Holcim met with the FLM responsible for the Mingo WA at their offices in Denver and presented all of the Class I area results, including sulfur and nitrogen deposition. These final results were also included in the Class I Area analysis submitted to both the FLM and APCP.

As also noted in the Lee Island Class I area report, the Forest Service ("FS") has developed sulfur and nitrogen deposition thresholds "...below which a land manager can recommend that a permit be issued" (U.S. Department of Agriculture ["USDOA"], FS, 1989). The Lee Island Class I area analysis showed that the contributions of all increment consuming sources to sulfur and nitrogen deposition were approximately a factor of 10 below the FS lowest deposition threshold thereby demonstrating there would not be an adverse effect due to sulfur and nitrogen deposition at Mingo.

2.14. PM₁₀ and Meteorology Monitoring Network

Comment No. 68.

We recommend that the permit should include these milestones; in particular if there is a strong preference to begin data collection soon after a final permit decision is made:

- A. It is not clear when Holcim must submit the plan
- B. It is not clear by which date MDNR must act on the plan
- C. It is not clear when Holcim must begin operation of the monitors.

Response

Holcim agrees with the inclusion of such milestones in the final permit. Holcim intends to submit the plan 180 days before commencing operations, and to begin operation of the monitors within 60 days of maximum production but no later than 180 days from commencing operations.

Comment No. 69.

Since the plant is already operating three meteorological monitoring sites, we recommend that these stations continue to operate throughout PM₁₀ data collection and until the approved plan terminates such monitoring.

Response

One meteorological monitoring site is sufficient for interpreting post-construction PM₁₀ monitoring results. Two of the existing site monitors will be removed during construction, as they are sited within the plant footprint. Additionally, operating multiple monitoring sites adds unnecessary costs and resource requirements that are not warranted.

Comment No. 70.

We also recommend the addition of a permit term that requires quarterly submission of the meteorological data, following some reasonable period to quality assure the data, in an approved format suitable for air dispersion modeling.

Response

Holcim does not disagree with this comment. Should milestone dates be included in the final permit, Holcim proposes to submit meteorological data no later than 60 days following the end of a monitoring quarter.

2.15. PM₁₀ Quarry Haul Road Plan

Comment No. 71.

Condition (2)(A)2.C. requires submission and approval of a dust suppressant control plan prior to implementation. The permit should include, at a minimum, specific milestones for submission of the plan by Holcim, review by department and any final decision dates. These dates should precede the date the first haul road is constructed.

Response

Holcim does not disagree with the comment. Should milestones be included in the final permit, Holcim proposes to submit the plan for department approval 180 days prior to commencing operations.

2.16. PM₁₀ Plant Haul Road Plan

Comment No. 72.

Condition (2)(A)3.B. notes that the plant haul roads shall be paved in accordance with industry standards. As a minimum, the permit should include a reference to the appropriate standards document, or should otherwise include explicit performance measures for paving the haul roads.

Response

The language in the Preliminary Determination is sufficient to ensure compliance with the modeling demonstration assumptions. The emissions factors within AP-42 do not provide for adjustments to particulate matter emission rates depending on the standard of paving utilized. A condition to merely pave the roads, with no standard specified, is sufficient to ensure compliance with NAAQS and increment standards. No change in the final permit is required.

Comment No. 73.

Condition (2)(A)3.C. requires the company to maintain and repair the road surface as necessary. The permit should clearly specify what paving standards must be met and who has the ultimate responsibility for verifying compliance with those standards.

Response

The language in the Preliminary Determination is sufficient. See response to Comment No. 72. No change in the final permit is required.

Comment No. 74.

Condition (2)(A)3.D. limits fugitive emissions beyond the “property line of origin.” Is this meant to be something other than the fenced or restricted property line? If fence line, just say property line.

Response

The “property line of origin” should refer to “Holcim’s property line” in Special Condition (2)(A)3.D.

Comment No. 75.

We recommend inclusion of explicit permit terms that mimic the assumptions used in the PM₁₀ modeling. If these conditions are not included as permit conditions, then the permit record should clearly explain why such conditions are unnecessary or should provide further detail in the fact sheet or response to comments document. There must be some basis upon which the company can certify its compliance status and also upon which a state or EPA inspector may determine that the underlying conditions are being met.

Response

Holcim disagrees with this comment. See Response to Comment No. 31.

2.17. TOC vs. VOC Monitoring

Comment No. 76.

Condition (2)(E) establishes a VOC limit of 182 pounds per hour (30-day block average) and 0.33 pounds VOC per ton clinker (30-day block average), but proposes to monitor as total organic carbon (“TOC”) [sic] as required by the MACT. If it is possible that

Holcim could over-report an exceedance of the standard due to exempt VOCs that would be counted by the TOC-CEMS, the permit should specify a TOC [sic] equivalent in lieu of the VOC limit so that compliance may be determined with minimal confusion.

Response

No change in the permit is required.

It is assumed that the commenter's references to TOC (total organic carbon) refer to emissions of THC, which are regulated under PC MACT. The VOC mass limits are derived by assuming compliance with the THC limit of 50 ppmvd (7% oxygen). However, given that certain hydrocarbon species are exempt from VOC consideration (e.g., methane), the emissions of VOC will always be lower than THC. Compliance with the THC MACT limit will ensure compliance with the VOC BACT limits. Therefore, monitoring THC as a surrogate for VOC will ensure that compliance can be determined for both pollutants with minimal confusion.

2.18. Mercury Testing

Comment No. 77.

It is uncertain if one test result can adequately characterize emissions throughout the operational and seasonal range of the kiln. We recommend that MDNR retain the mercury testing requirement, but consider addition of other periodic testing requirements to better understand the range of mercury emissions over time. Collection and analysis of 2-4 samples a year until the kiln is fully optimized would provide better assurance that the mercury emissions remain below the permitting threshold or that they are properly reviewed for BACT by the department.

Response

Holcim disagrees with this comment as additional testing is unnecessary. Holcim developed a conservative estimate for mercury emissions from the Lee Island facility to use in the various analysis components of the PSD/NESHAP permit application. Holcim evaluated the mercury content of various raw materials and fuels and utilized a conservative 30% system removal efficiency ("SRE") in developing the 160-pound per year estimate. This estimate was reviewed and approved by APCP staff.

The estimate is conservative because testing done on modern cement kiln systems indicates that a 30% SRE is a low estimate of capture, with SRE's typically ranging from 50% to 90% because of the dry scrubbing effect of the finely ground raw material and highly efficient particulate control devices used on modern cement kiln systems.

The testing requirement is to confirm that the conservative estimate is correct. There is no precedent in any NESHAP rule applicable to cement plants that would support a more frequent sampling interval. The applicable NESHAP rule does not have a mercury standard or testing requirement, and similar NESHAP rules with applicable mercury emission standards only require testing once every 5 years to demonstrate compliance with a specific mercury standard.

2.19. Other Considerations

Comment No. 78.

In General Condition (1)(A), the permit notes that Holcim must prepare a written operation and maintenance plan, including the “PC MACT sources identified in special conditions (6)(C)2.” We were unable to locate this special condition in the draft permit.

Response

General condition (1)(A) should reference Special Condition (7)(C)2. Holcim agrees that the change should be made.

Comment No. 79.

The department should consider the addition of a general duty clause requiring Holcim to minimize emissions during all periods of operation consistent with good engineering practice.

Response

Holcim disagrees with this comment. The inclusion of a general duty clause requiring Holcim to minimize emissions during all periods of operation consistent with good engineering practice is duplicative and unnecessary. As required under 40 C.F.R. 60.11(d) and 40 C.F.R. 63.6(e)(1)(i) through (iii), all affected facilities must, at all times, be operated and maintained in a manner consistent with safety and good air pollution control practices for minimizing emissions.

Comment No. 80.

Condition (7) includes a disclaimer that the summary of MACT requirements is included only for informational purposes and that the company should defer to the MACT standard for an understanding of its obligations under the rules. It would be helpful if the permit treated each of the other technology requirements (NSPS Subpart OOO, Kb, Y) in the same fashion.

Response

Holcim agrees with the comment.

Comment No. 81.

MDNR should consider adding a re-opener clause or other disclaimer that issuance of the PSD permit does not exempt Holcim from further scrutiny and that the department may require 1) additional permanent reductions, if necessary, as part of the broader geographical control plan, and 2) temporary curtailment of emissions on critical ozone days.

Response

Holcim disagrees with the comment. The addition of a specific permit condition to address these issues is not required. The facility will be legally subject to the current Missouri SIP, together with any subsequent revisions. Any future actions to develop additional controls will be part of a SIP action, and will include as necessary control requirements for existing sources. Holcim's facility will be obligated to comply with all future applicable regulations.

Comment No. 82.

The permit should make clear that Holcim is authorized to combust only those fuels that are specifically evaluated as part of this PSD permit analysis. We recommend that the permit clarify that if other fuels appear promising in the future, Holcim would be authorized to combust such fuels only after seeking approval from MDNR; following an explicit BACT analysis and opportunity for public review for each new fuel which may result in a significant increase in emissions.

Response

Holcim is installing a wide range of CEMs to monitor emissions, and has specific limits for all major criteria pollutants. Holcim has also submitted, as part of the PSD permit application, a listing of the relevant HAPs expected to be in the fuel and raw material. The permit application is incorporated by reference into the permit. If a new fuel or raw material is to be used in the future, Holcim will incorporate in the operating record documentation that the contents of the fuel or raw material used are consistent with the permit application, the permit, and applicable regulations.

Through the permit review process, Holcim supplied the department with information regarding the facility's design to combust a number of non-hazardous alternative fuels referenced in the permit application and subsequent documents incorporated by reference in the Preliminary Determination.

Importantly, no increases in the proposed emission rates are necessary to accommodate using alternate fuels. Therefore, given the presence of CEMs and the capability of the facility to continuously monitor emissions, compliance with emissions limits is the focus. As long as limits are not exceeded, fuel changes as outlined in the application and described in the Preliminary Determination, are permissible.

Emissions from a modern precalciner/kiln system can be estimated using engineering estimates based upon kiln design, raw material and fuel characteristics. The proper way to convey this information is to descriptively address each pollutant in the context of a modern precalciner/kiln operation as follows:

Particulate Matter

Filterable

The kiln system emission rate of particulate matter (PM) is a function of the PM control device ("PMCD") operation (i.e., type, design, condition, etc.), and not a function of the

fuel type.⁶ Therefore, no appreciable change in filterable PM emissions would be expected by using alternate fuels.

Condensable

The emission rate of condensable PM from cement kiln systems is a very complex and largely unknown function of many variables. The variables include not only the exhaust gas stream characteristics, but also atmospheric conditions.⁷ The only variable potentially affected by the use of alternate fuels is the exhaust gas precursor constituent concentration. However, the exhaust gas concentrations of sulfur dioxide (SO₂), chlorine (Cl₂), and ammonia (NH₃) are predominantly driven by their content in the raw feed materials.^{8,9,10} Therefore, since alternate fuels, as well as the primary fuels, are not expected to have an appreciable impact to precursor concentrations in the exhaust gas, no appreciable change in condensable PM emissions would be expected.

Sulfur Dioxide

During periods of kiln system startup, where the full absorption capacity of the system has not been achieved, the use of high sulfur content alternate fuels could result in a short-term increase in SO₂ emissions.¹¹ However, the extended use of such fuels is precluded due to facility design and process limitations on overall sulfur input. In addition, this type of short-term variability in SO₂ emissions mimics the emissions variability of normal operations.

During periods of normal operation of the kiln system, SO₂ emissions are independent of the fuel sulfur concentration.¹² Additionally, as discussed above, the fuel sulfur concentration is limited by facility design and process requirements.

Nitrogen Oxides

The primary factor attributing to the proposed NO_x emission rates is thermal NO_x formed due to the operating requirements for producing a quality Portland cement clinker (i.e., high temperature, oxidizing atmosphere in the burning zone).¹³ This operating requirement must be maintained independent of the type of fuel being used.

The use of alternate fuels at many facilities has resulted in noticeable reductions in NO_x emissions. However, most of these fuel types are limited in supply and cannot be

⁶ Addendum No. 3, Sections 3.1 and 3.2, May 31, 2002.

⁷ Addendum No. 3, Section 3.1, May 31, 2002.

⁸ Response to Preliminary Best Available Control Technology Determination, Section 3.2.1.1, November 20, 2002.

⁹ Response to Preliminary Best Available Control Technology Determination, Section 3.2.1.3, November 20, 2002.

¹⁰ Response to Preliminary Best Available Control Technology Determination, Section 3.3.1.5, November 20, 2002.

¹¹ Response to Preliminary Best Available Control Technology Determination, Section 3.2.1.1, November 20, 2002.

¹² Response to Preliminary Best Available Control Technology Determination, Section 3.2.1.3, November 20, 2002.

¹³ Response to Preliminary Best Available Control Technology Determination, Section 3.3, November 20, 2002.

assigned as a contributing factor to reducing overall NO_x emissions.¹⁴ Therefore, although the use of certain fuels may have beneficial impacts, no appreciable change in annual NO_x emissions would be expected by using alternate fuels.

Hydrocarbons

The kiln system emission rate of hydrocarbons is primarily a function of the raw materials used in the process and not a function of the fuel type.^{15,16} Therefore, no appreciable change in hydrocarbon emissions would be expected by using alternate fuels.

Carbon Monoxide

Kiln system CO emissions are a product of incomplete combustion and a byproduct of treating the raw material feed.¹⁷ The use of certain types of alternate fuels can also result in increased CO emissions.¹⁸ However, the environmental benefits of utilizing alternate fuels more than offsets the increased CO emissions from the cement plant.¹⁹ In addition, the proposed CO emission rate accounts for the use of alternate fuels. Therefore, no further increase in CO emissions is necessary to accommodate using alternate fuels.

Hazardous Air Pollutants

Organic

HAPs that are also classified as organic compounds are addressed above under the hydrocarbons heading.

Inorganic

Inorganic HAPs can generally be divided into two classifications, those whose emissions are primarily dependent upon raw material constituent concentration and those whose emissions are primarily dependent upon fuel constituent concentration. For inorganic HAP emissions dependent upon the raw materials, such as hydrogen chloride (HCl) and Cl₂, no appreciable change in emissions would be expected by using alternate fuels.

Conversely, the concentration of certain metal compounds in alternate fuels can have an affect on the overall emission rates of the corresponding HAPs.^{20,21} However, with

¹⁴ Response to Preliminary Best Available Control Technology Determination, Section 3.3.1.10, November 20, 2002.

¹⁵ Response to Preliminary Best Available Control Technology Determination, Section 3.4, November 20, 2002.

¹⁶ Response to Preliminary Best Available Control Technology Determination, Section 3.3.1.10, November 20, 2002.

¹⁷ Response to Preliminary Best Available Control Technology Determination, Section 3.4, November 20, 2002.

¹⁸ Response to Preliminary Best Available Control Technology Determination, Section 3.3.1.10, November 20, 2002.

¹⁹ Response to Preliminary Best Available Control Technology Determination, Section 3.4, November 20, 2002.

²⁰ Addendum No. 2, Section 3.0, August 4, 2000.

²¹ Hazardous Air Pollutants Memorandum, June 7, 2001.

alternate fuels being limited to those classified as non-hazardous, coal typically represents the worst-case fuel from a HAP metal standpoint. Therefore, no increases in the proposed inorganic HAP emission rates are necessary to accommodate using alternate fuels.

Comment No. 83.

Page 24 in the fact sheet describes the improvements in energy efficiency from the precalciner, preheater multi-stage combustion kiln at the Lee Island plant over the industry norm. How are the energy efficiency improvements important to the final permit decision?

Response

The energy efficiency information was supplied for information only to illustrate the significant improvements made in cement manufacturing technology over that which many in the public and in the regulating agencies are familiar with. The energy efficiency improvements are important in that it relates to the emissions of NO_x, which is directly related to fuel efficiency. The low specific emissions of NO_x are only able to be achieved through the application of a very fuel efficient system.

Comment No. 84.

Permit Attachment A provides a general framework for how Holcim should calculate compliance with the annual mass and rate limitations. An example, showing how each calculation is to be made, would be very helpful.

Response

Attachment A included in the Preliminary Determination, is sufficient an example for Holcim. No modification or additional information is required.

Comment No. 85.

The table on page 44 of the fact sheet indicates that Holcim's 31.6 µg/m³ contribution will exceed the 30 µg/m³ PM10 24-hour increments by itself. On page 47, the table indicates that Holcim's increment contribution is only 26 µg/m³. We recommend that to avoid any confusion, it would be helpful to add additional clarification that 31.6 µg/m³ is the maximum 24-hour concentration, not the high second-highest 24-hour value that determines if the increment is exceeded or not.

Response

Holcim agrees with the comment.

3. STATE OF ILLINOIS COMMENTS

The Preliminary Determination included specific language requesting comment on the application of ICT for NO_x control from the State of Illinois, as an affected state.

James Morgan, Senior Assistant Attorney General, submitted a comment letter on March 29, 2004 on behalf of Lisa Madigan, Attorney General of the State of Illinois (hereinafter referred to as "Illinois comments").

The Illinois comment letter expressed support at the department's decision and noted:

"We commend the Department and the Company for all of the effort expended to assure that emissions from the facility will comply with Missouri's air pollution standards and will not further degrade air quality in Illinois. These comments are intended to assist in your achieving that goal."

"The proposed permit reflects a significant effort by the Department and the applicant to balance the project's impact on the environment and the economic development the project will bring."

Technically, most of the comments were posed as questions instead of suggestions or recommendations. Nevertheless, where questions were asked in comments, answers are included in the responses.

Comment No. 86.

The proposed determination relies on forecasts of what emissions will be and the corresponding results on air quality but does not describe what measures will be required to verify those projections accurately forecasted the emissions and their impacts? Will there be such requirements included in the permit? Are they required by regulation or statute?

Response

Since this is comment was made on a specific PSD draft permit, Holcim interprets the comment to refer to emissions "forecasts" and "projections" in terms of the source's emissions, emissions limits and compliance verification requirements.

Emissions from the facility were analyzed for their air quality impacts as outlined in the Preliminary Determination (pp. 43-52). The ambient air quality impact assessment ("AAQIA") showed compliance with ambient air quality standards (NAAQS, Class I and Class II PSD increment standards). The AAQIA was based on "forecasted" levels of emissions, as supplied by Holcim in the permit application.

In order to ensure that the projections of emissions from the application are verified, the department's Preliminary Determination contained emissions limitations from the facility in the forms of Special Conditions. These Special Conditions (see Special Conditions (2) through (7), Preliminary Determination pp. 5-15) require emissions from the facility at levels equal to or lower than those used in the AAQIA modeling demonstration.

These special conditions also contain the requirement for continuous emissions monitoring. That is, the facility will be equipped with stack monitors to measure continuously the emissions of NO_x, SO₂, CO, THC and opacity. The Preliminary Determination also requires Holcim to report emissions and demonstrate compliance with the permit limits on an on-going basis.

Additionally, the Preliminary Determination requires Holcim to install and operate a system of post-construction PM₁₀ monitors. Holcim will also provide an additional study of PM₁₀ concentrations using the CALPUFF model.

To the extent the commenter refers to the air quality impacts of ozone, the Preliminary Determination noted²²:

“U.S. EPA has not provided guidance on attributing ambient ozone concentrations to any installation’s ozone precursors, VOC or NO_x emissions.”

However, the need for such a tool is not expected. The department ensured insignificant impacts on ozone concentrations in St. Louis based on its conservative, worst-case assessment of the project. A study commissioned by the U.S. EPA²³ showed that the facility (when emitting much higher emissions of NO_x than the Preliminary Determination allows) would not significantly impact the St. Louis SIP demonstration for ozone. The maximum peak ozone difference predicted by this modeling in this study was 0.24 ppb, which is below the statistical significance level, less than the modeling accuracy, and is on par with the level of accuracy for ozone monitors.

Using the EPA-approved ozone attainment demonstration, the department’s further “worst-case” sensitivity analysis placed the Holcim facility in a location directly upwind of the St. Louis metropolitan area in Franklin County, Missouri, approximately 100 miles removed from its actual location in Ste. Genevieve County. The Preliminary Determination’s conclusions and Special Conditions regarding ozone concentrations are based on this ensuring that this worst-case assessment still resulted in less than significant impacts.

Comment No. 87.

What mechanisms are in place to respond to greater than projected air quality impacts?

Response

Should additional modeling or monitoring results indicate a concern for a violation of a NAAQS or PSD increment standard related to the operation of the facility, then Holcim will be required to undertake corrective actions.

Like the PSD program of the Clean Air Act (“CAA”), Missouri’s construction permitting program is based on the requirement for demonstrating via computer modeling that

²² Preliminary Determination, p. 18 of 79.

²³ Analysis of the Ozone Air Quality Impacts of the Proposed Holnam, Inc. Portland Cement Manufacturing Plant, Alpine Geophysics Report, May 14, 2001.

emissions from a facility will be below relevant air quality standards. This has been achieved and is evident in the Preliminary Determination.

Additional mechanisms are available to the department should an air quality issue arise of a more general, or regional type. If necessary, the department has the ability at that time to develop further rules for sources through a SIP development process. Nothing in this permit precludes the department from using that option, if necessary, to address air quality issues not related to a specific source.

Comment No. 88.

Similarly, the authorization of SNCR as ICT anticipates reductions in emissions but the permit does not require confirmation of that forecast. What monitoring is required to verify the reductions?

Response

Reductions in emissions from SNCR are required in the Preliminary Determination. Special Condition (3) requires 12-month rolling average emissions of NO_x to be less than 2.4 pounds NO_x per ton clinker, a reduction from 2.8 pounds NO_x per ton clinker without SNCR.

The same Special Condition (3) of the Preliminary Determination requires Holcim to “operate continuous NO_x emission monitors to measure, record and report NO_x emissions.”

The conditions in the Preliminary Determination are sufficient to confirm that emissions from the facility will be below the emission limits and confirm the “forecasts” provided in the application materials.

Comment No. 89.

Under what conditions can SNCR as ICT be discontinued and would any controls be substituted for it?

Response

Special Condition (3)(A)7. of the Preliminary Determination provides the SNCR as ICT program will be operated for a term up to five (5) years. At the conclusion of the ICT program, Holcim and the department will evaluate the results of the testing program and determine the appropriate next steps. One unlikely, but possible outcome of the ICT program would be to discontinue SNCR, although it is more likely that any discontinuance would only be for specific ambient or process conditions.

Regardless of the outcome of the SNCR ICT testing program, Special Condition (5) of the Preliminary Determination will remain a requirement for compliance. Special Condition (5) places a limit on summer time NO_x emissions which is not related to the SNCR as ICT program. Should SNCR not be required following the conclusion of the ICT program, Holcim will still be required to maintain compliance with this special condition.

Similarly, regardless of the outcome of the SNCR ICT testing program Special Condition (3)(A)4. of the Preliminary Determination will remain in place, requiring 12-month rolling average NO_x emissions less than 2.4 pounds of NO_x per ton clinker.

At all times before, during and after the SNCR ICT program, Holcim will be required to operate BACT. BACT for NO_x is multi-stage combustion.

Comment No. 90.

The determination also states that

“SNCR will be operated continuously, but will undoubtedly be less effective during certain atmospheric and processing conditions. Avoiding the violation of other state and federal requirements will be part of the operational procedures to be developed during the testing and evaluation phase.”

Are the possible opacity violations mentioned in the preceding portion of the evaluation the only “violation of other state and federal requirements” at issue?

Response

The possible visible opacity violations are the “violation of other state and federal requirements” referenced. Opacity is a regulated standard with federal enforceability through the PC MACT standard.

Through the permit review process, Holcim provided the department with evidence showing that under certain ambient and process conditions, ammonia slip from an SNCR system would cause the formation of an ammonium-sulfate or ammonium-chloride aerosol mist, which would be presented in the form of a detached plume. Should the opacity of such a plume exceed 20 percent, a violation of a Federal MACT standard would occur. See Response to Comment No. 26.

Comment No. 91.

Is there a limit on the number or extent of violations that are allowed to occur during the testing and evaluation phase?

Response

Guidelines for the testing and evaluation of the ICT will be developed in the testing and evaluation protocol, and approved by the department upon submittal and review.

In order to fully determine the effectiveness of the SNCR technology, Holcim will utilize it in a number of combinations of process parameters and ambient weather conditions. This plan will be fully determined according to the SNCR ICT testing and evaluation protocol, required to be submitted to the department by Special Condition (3)(A)5. in the Preliminary Determination.

Comment No. 92.

Will operational procedures be developed to identify processing conditions which will maximize effectiveness?

Response

The goal of the SNCR ICT program will be to develop operational procedures that identify process *and ambient* conditions that will enable SNCR to be utilized to the maximum extent. During the permit review period, Holcim provided the APCP with a starting point for an ICT protocol, identifying several of the key parameters that will be investigated. This document has been incorporated into the permit by reference. As required by the Preliminary Determination, Holcim will submit, for APCP approval, an SNCR ICT testing and evaluation protocol prior to commencing the evaluation period.

Comment No. 93.

The proposed determination also relies on retirement of emission reduction credits to be acquired from Solutia. What effect will Solutia's bankruptcy have on the availability of those credits? What will be the impact if those credits become unavailable?

Response

Solutia's bankruptcy will have no effect on the availability of ERC credits or the permit. The ERCs from Solutia that will be retired upon issuance of the final permit are already in Holcim's emissions banking and trading "account" with the APCP. Holcim purchased the ERCs from Solutia prior to that company's bankruptcy filing. As such there will be no impact on the final permit.

Comment No. 94.

In the BACT Analysis for NO_x, the department found that SCR was technically infeasible, in part, because "the cement kiln gas stream has a high degree of fluctuation, both short and long-term." What is the source of this fluctuation?

Response

Fluctuations in the characteristics of the cement kiln gas stream are derived from inherent process variability. This process variability comes in many forms: 1) variations in the chemical or physical properties of the raw materials fed to the system, 2) variations in the chemical or physical properties of the fuels used for combustion, and 3) variations in the modes of operation (i.e., the kiln system is affected by operations of upstream equipment such as the raw mills).

During the permit review process, Holcim provided the APCP with a description of the nature of the process variability, and a comparison of cement kilns versus utility boilers in this regard. Two very important differences between cement kilns and utility boilers, for example, are the high processing temperature (>2,500 °F) required to produce cement clinker and the exothermic reactions that occur as part of the process. As a result, the process is sensitive to slight changes in raw materials or fuels. Any small variation can increase or decrease the heat required for completing the chemical

reactions, or at worst, cause the exothermic reactions to cease. Consequently, the exact characteristics of the exhaust gas, including NO_x content, temperature and other critical parameters, are subject to fluctuations that are not seen in the power industry.

Comment No. 95.

Was this fluctuation accounted for in the evaluation of other technologies? If not, how will such fluctuations affect achieving the specified emission limits and will those impacts be monitored?

Response

This fluctuation was accounted for in evaluating other technologies. Multi-stage combustion (BACT for NO_x) is an integral part of the process itself and not an “add-on” control. It has also been demonstrated to operate in the required environment. As such, the same concerns do not exist as with SCR. As a technology, SCR is more sensitive to exhaust gas fluctuations due to its being a “catalyst-based” control device. Catalyst fouling, plugging, poisoning and deactivation are all related to the exhaust gas characteristics and fluctuations in those characteristics. See Response to Comment No. 138.

Comment No. 96.

The BACT analysis also did not delineate why Low-NO_x burners were not considered to be the “Top” control technology.

Response

Low-NO_x burners are considered an integrated part of the multi-stage combustion system. In the November 20, 2002 *Response to Preliminary Best Available Control Technology Determination*, Holcim stated that “MSC also incorporates low-NO_x burners” (Attachment 2, page 2-47) and that “Holcim is proposing to use multi-stage combustion with low-NO_x burners for controlling NO_x emissions from the Lee Island plant.” (Attachment 2, page 2-54).

Accordingly, low-NO_x burners will be installed as outlined in the BACT documentation (incorporated by reference into the permit).

Holcim does not disagree with a clarification in the final permit to reflect this case.

Comment No. 97.

With regard to impacts from mercury emissions, has there been an evaluation of whether the projected emissions will lead to an increase in the issuance of health-based fish advisories in Illinois?

The gap [between the existing value of mercury present in fish and the threshold used by the State of Missouri for issuance of health based fish advisories] may be substantially smaller for a number of waterbodies in Illinois. Several waterbodies within the downwind range of plant emissions are the subject of health based advisories for

several fish species and a small increase could lead to the expansion of the advisory to other species.

Response

A specific analysis of the whether the emissions of mercury from Lee Island would lead to increased fish advisories in Illinois was not conducted. Holcim disagrees with the commenter's inference that such a study should have been conducted.

The emissions of mercury from the facility showed compliance with HAP risk assessment modeling. In fact, the results of the HAP risk assessment modeling show that on a 24-hour basis, the resulting concentrations of mercury are only 1/3rd of the risk assessment level ("RAL"). On an annual basis, the resulting concentrations of mercury are 46 times smaller than the RAL.

Additionally, Holcim submitted to the department an analysis of the project on plants, animals and soils, in accordance with PSD requirements.

These studies concluded that no adverse effects due to ambient mercury concentrations are expected from the Lee Island plant.

The Preliminary Determination contained a detailed analysis of mercury (pg. 52). The Preliminary Determination states:

"There will be mercury emissions from the operation of this cement kiln system. However, the evidence indicates that Holcim met every standard evaluated."

The record is clear that mercury emissions from the facility have been analyzed in accordance with all regulatory requirements. No additional studies are required, nor is a change in the final permit required from this comment.

Comment No. 98.

The issues identified above need to be addressed to assure that the proposed permit will satisfy the applicant's goal of operating a facility that will protect the environment in Missouri and Illinois.

Response

The previous responses are sufficient to address the questions included in the Illinois comment letter. No further response to this comment is required.

4. FEDERAL LAND MANAGER COMMENTS

On March 29, 2004, Mr. Bud Rolofson, Meteorologist for the U.S. Fish and Wildlife Service Air Quality Branch (the designated Federal Land Manager for Mingo Wildlife Area ["WA"]) submitted a letter to the APCP.

Comment No. 99.

On March 24, 2004, the FWS Air Quality Branch was informed that Holcim had requested higher short-term SO₂ emission limits to allow for "short-term variability in equipment operations." Although we received a revised Class I analysis from the applicant today we have not had sufficient time to perform a thorough review.

As you know, 40 C.F.R. Part 51, Section 307, indicates that all information relevant to the permit application should be made available to the FLM within 30 days of receipt of and at least 60 days prior to public hearing. FWS would like to consider all information associated with the permit application and would be happy to meet with the State or the applicant to discuss our concerns in order to assist the permitting process.

Response

As this is an agency communication and not necessarily a comment related to the Preliminary Determination, no response is required. However, Holcim would like to provide its position on the FLM's statements.

On January 6, 2004, Holcim supplied the FLM with a revised Class I analysis. This represented the final piece of relevant "application" information for the Lee Island project. As such, the FLM had sufficient time to evaluate this information prior to the public hearing (and close of comment period). It is important to note that the FLM did not supply a comment related to the permit application or Preliminary Determination, nor did they request any additional mitigation for impacts on Class I areas. This indicates satisfaction on their part with the project and Preliminary Determination.

During the public comment period, Holcim submitted a comment requesting an increase in the 3-hour and 24-hour SO₂ emission rate limits contained in their Preliminary Determination. As 24-hour SO₂ emission rates are relevant to visibility demonstrations in Class I areas, on March 29, 2004, we provided the FLM with a revised Class I visibility analysis for Mingo.

As noted in our comment letters to both the FLM and MDNR, the total annual emissions of SO₂ will not increase with this comment. Holcim must demonstrate compliance with the BACT-determined emission rate of 1.26 pounds of SO₂ per ton of clinker on a 12-month rolling average basis. On a short-term basis, inherent process variability due to random fluctuations in fuel and raw material chemical and physical properties will cause emissions to deviate from the long-term average emission rate, both above and below the long-term average value on an equally probable basis. The operational plan of the facility will not change as a result of this comment, nor will the control technology requirements be affected.

Holcim has provided both the FLM and APCP sufficient technical information to support acceptance of Holcim's previous comment without delay in permit issuance. We anticipate the department will include the FLM in its response to Holcim's previous comment for increased short-term SO₂ limits and finalize the permit accordingly.

5. GENERAL COMMENTS FROM CITIZENS AND ORGANIZATIONS

5.1. Procedural Issues

Comment No. 100.

A comment letter requested additional opportunity to provide comment on the permit through the addition of a public hearing in the St. Louis area. The department subsequently accepted this comment by scheduling a second public hearing on March 29, 2004 in St. Louis.

Response

A public hearing was held from approximately 11:00 AM to 1:30 PM in St. Louis on March 29, 2004. No further response is required.

Comment No. 101.

One commenter stated that the St. Louis hearing was supposed to be in the evening and for the benefit of the environmental groups.

Response

Holcim disagrees with this comment. The department complied with all applicable public participation requirements.

Comment No. 102.

One commenter requested that the hearing transcript(s) be made available on the department's website.

Response

Holcim does not object to publishing the hearing transcripts on the department's website. However, it should not be an impediment to the issuance of the final permit.

Comment No. 103.

Several commenters requested that the public comment period be extended beyond March 29, 2004. The State of Illinois' public comment periods typically extend beyond the public hearing date and many citizens may not be aware that Missouri is different.

Response

Holcim disagrees with this comment. The department complied with all applicable public participation requirements.

The Notice of Public Hearing published on February 22, 2004 in the St. Louis Post-Dispatch and February 25, 2004 in the Ste. Genevieve Herald specifically addressed the period in which public comments would be accepted. The Notice stated that

“Citizens are invited to submit any relevant information, materials, and views, in support of or in opposition to the proposed construction, in writing, by the end of the day on March 29, 2004.”

Additionally, Missouri rule 10 CSR 10-6.060 (12)(B)B. states that

“...any interested person may submit relevant information materials and views to the permitting authority, in writing, until the end of the day on which the hearing is held.”

The Notice was clear in this regard and consistent with the regulatory requirements. The comment period should not be extended.

Comment No. 104.

Several commenters stated that an Environmental Impact Statement (“EIS”) should be completed prior to permit issuance, or that the entirety of the project should be reviewed.

Response

Missouri’s environmental regulations do not require, nor address, the preparation of an EIS for any permits, much less construction permits, under 10 CSR 10-6.060 (8).

Comments regarding the preparation of an EIS for this project were only relevant in the matter of the Clean Water Act section 404 permit, issued by the U.S. Army Corps of Engineers in July 2003. In their permit decision document, the Corps determined that the project will not have a significant impact on the environment, and therefore an EIS was not required.

The environmental groups have long-championed a project-wide EIS in state permitting proceedings as well as in the Corps permit review. In its Response to Comments that accompanied Holcim’s stormwater operating permit, MDNR’s Water Pollution Control Program responded to the “EIS comment” by stating:

“Response 1 – Each of the environmental permits that are required of Holcim to construct and operate a cement kiln is authorized under a separate statute. The requirements for public participation and timeliness for review are different under each of these laws and regulations. Combining the permitting efforts would pose significant administrative difficulties and might compromise the department’s ability to ensure that all regulatory program requirements are fulfilled. **In the department’s opinion, the separate, sequential review of each proposed permit on this project allows the public a better opportunity to review and understand the various environmental aspects of this project.** A combined approach on a project of this scale would be overwhelming to the persons who wished to closely review and comment on each permit.” (Emphasis added).

A request for an EIS in a construction permit proceeding is irrelevant and unsubstantiated in Missouri environmental regulations. As such, the comment should be denied.

Comment No. 105.

One commenter stated that Holcim's compliance history was not good, as evidenced by environmental fines paid in Missouri and elsewhere.

Response

Missouri's state rules at 10 CSR 10-6.060 (8) do not require an evaluation of an applicant's compliance history. As such, the comment does not require a response. However, to the extent the commenter alleges a negative compliance history, Holcim would like to correct the record.

Overall, Holcim's environmental compliance record in Missouri is good, considering the size and nature of the company's operations, and does not demonstrate a pattern of noncompliance that suggests a reasonable likelihood of future noncompliance in the operation of the proposed quarry. Each time an incident has occurred, the problems have been promptly corrected, explained, or resolved, demonstrating the company's responsiveness, good working relationship with MDNR, and commitment to environmental compliance.

5.2. Control Technology Issues

Comment No. 106.

Several commenters stated that the proposed cement plant should be required to adhere to the strictest standards of clean air and/or water regulation.

Response

As a condition of receiving a PSD construction permit, Holcim has had to demonstrate compliance with all NAAQS and PSD increment standards. Additionally, the permit requires the application of BACT to control emissions. The air permit does not regulate water quality. Separately, the department has previously issued two separate water permits for the project: a Clean Water Act Section 401 Water Quality Certification and a Missouri State Operating Permit (for stormwater control). The Lee Island facility will comply with all applicable standards.

Comment No. 107.

Several commenters stated that control technology requirements should be more stringent than those currently included in the Preliminary Determination.

Response

As detailed in the draft permit, Holcim will be required to install BACT for control of NO_x, SO₂, PM₁₀, CO and VOC emissions. Additionally, Holcim will utilize SNCR as an ICT for additional control of NO_x.

The BACT requirements are specified in the Federal regulations under the PSD program and implemented in the Missouri SIP. BACT is defined at 40 C.F.R. 51.165(a)(1)(xl) as

“... an emissions limitation (including a visible emissions standard) based on the maximum degree of reduction for each regulated NSR pollutant which would be emitted from any proposed major stationary source or major modification which the reviewing authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such sources or modification ... In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard ...”.

EPA guidance (New Source Review Workshop Manual, Draft, October 1990) further specifies that BACT is to be determined for each pollutant subject to PSD review using a “top-down” methodology consisting of five steps. The steps are: 1) Identify all control technologies; 2) Eliminate technically infeasible options; 3) Rank remaining control technologies by control effectiveness; 4) Evaluate most effective controls and document results; and 5) Select BACT. The department determined BACT for each pollutant based on a rigorous “top-down” analysis performed in accordance with EPA regulations, the State of Missouri SIP, and EPA guidance.

Comment No. 108.

Several commenters requested denial of the permit based on general air quality concerns.

Response

The department’s analysis, included in the Preliminary Determination, concluded that the facility will operate in compliance with all applicable air quality standards and therefore permit denial is not warranted.

Comment No. 109.

Several commenters stated that the draft permit did not consider the effects of the facility upon the new 8-hour ozone standard.

Response

Holcim has demonstrated, and MDNR has subsequently concluded, that the proposed emissions will not cause or contribute to a violation of any NAAQS. The 8-hour ozone is not legally enforceable and has not yet been implemented. MDNR properly based its decision on the currently enforceable NAAQS. The commenter’s suggestion that MDNR should have based its decision on standards which are not yet legally enforceable

anywhere in the United States, and denied the permit on that ground, is incorrect. See Response to Comment No. 118.

Comment No. 110.

Several commenters stated that the facility will detrimentally impact the area's ozone concentrations, general air quality, or pose health issues in the regional or local community.

Response

The Preliminary Determination concluded that the facility has demonstrated compliance with all applicable health-based air quality standards. These standards have been established to protect the most sensitive members of the population.

The Preliminary Determination contained a summary of an analysis completed by the APCP assessing the impact of the proposed Lee Island facility on ambient concentrations of ozone in the St. Louis area. This analysis concluded that with the control requirements and special conditions of the permit, the facility will not have a significant impact on the concentrations of ozone in the St. Louis area.

Many commenters selectively cited the Preliminary Determination in support of their comments, stating:

“...the department concluded that ozone precursor emissions **as originally proposed** would have a substantial impact on the St. Louis area...” (Emphasis added).

This mis-statement suggests the commenter did not consider that additional mitigation, beyond that originally proposed, was required by the department to further minimize the project's potential impact on St. Louis to a level acceptable to the department. The statement as shown refers to the application, not the Preliminary Determination. This statement has been taken out of context, when, in fact, the department concluded that with the conditions contained in the Preliminary Determination, ozone air quality in St. Louis would be protected.

During the permit review process, Holcim also provided the department with a study showing that the facility, at a higher emission rate than permitted, would meet established standards that protect human health and safety, along with standards that protect air quality. Additionally, a study commissioned by EPA also demonstrates that the project will not negatively impact the St. Louis region's ability to meet federal ozone standards.

Comment No. 111.

Several commenters stated that the draft permit would allow Holcim to emit more nitrogen oxides (NO_x), an ozone-forming pollutant, than all other sources in Ste. Genevieve County combined.

Response

The decision to issue or deny a PSD permit is not made on the comparative size of a source to the other sources within a county or regional airshed but is instead made based on a detailed evaluation of the facility's impacts. As illustrated in the Preliminary Determination, the proposed facility will be equipped with the BACT and ICT for control of NO_x emissions, will be in compliance with NAAQS and PSD increments standards for NO_x, and will not cause nor contribute to an exceedance of the ozone standard within the St. Louis nonattainment area.

The comment is also inaccurate. The department's 8-hr ozone nonattainment area recommendation to EPA²⁴ included emissions data for several counties in and around the St. Louis Metropolitan Statistical Area. Ste. Genevieve County was identified as having NO_x emissions of 15.7 tons per day ("TPD") (2,402 tons/ozone period). Conversely, the draft permit authorizes Holcim to emit 1,622 tons of ozone during the May 1st through September 30th summer ozone season. Holcim is also authorized to retire additional emission reduction credits from within the St. Louis nonattainment area, and increase source NO_x emissions. However, the maximum total NO_x source emissions are capped at 1,822 tons/ozone period. Holcim will not emit more NO_x than all other sources in Ste. Genevieve County combined.

Comment No. 112.

Several commenters stated that there would be detrimental economic impacts as a result of this project and its air emission impacts in St. Louis, or as a result of a shift in jobs should Holcim's existing Clarksville, Missouri cement plant be closed as a result of the Lee Island plant.

Response

The record contains a large amount of evidence regarding the project's positive economic impact to the Ste. Genevieve, eastern Missouri and the St. Louis areas due to the positive impact of a \$600 million direct investment, the creation of over 1,000 construction jobs through a three-year construction process, and the creation of 200 full-time jobs for subsequent operations of the facility. The Lee Island plant will have an annual payroll of over \$10 million. Further spin-off job creation in eastern Missouri is expected to add an additional 336 jobs to the Missouri economy. Further, Holcim has publicly stated that, at this time, there are no plans to close the Clarksville plant nor move those operations to Lee Island.

The Preliminary Determination includes conditions that ensure that the facility will operate in compliance with NAAQS and PSD increment standards. In terms of ozone attainment, no adverse economic impacts are expected as a result of this project. Through the permit review period, Holcim provided modeling studies showing that the impact of the Lee Island facility upon the state's SIP modeling demonstration (showing compliance with the 1-hour standard) was insignificant. The same conclusion was reached by Alpine Geophysics, an EPA contractor. Additionally, the Preliminary Determination requires additional conditions that effectively reduce by half the facility's

²⁴ Technical Support Document for Determination of Nonattainment Boundaries in Missouri for the 8-hour Ozone National Ambient Air Quality Standard, MDNR, July 2003.

contribution to ozone precursor formation in the summer ozone season. With these conditions and demonstrations in place, no adverse economic impacts are expected to result from this project.

The claims that increased health impacts and costs would detrimentally impact the St. Louis economy are without merit. These claims should not be considered when making the final determination.

Comment No. 113.

Several commenters suggested that the project would significantly negatively impact air quality at the Mingo National WA or requested that a cumulative assessment of the impacts of Holcim's Lee Island facility and Peabody Energy's Prairie Generating Station project (in Illinois) on Mingo be completed.

Response

As part of the permit application process and review, Holcim submitted a study demonstrating that the Lee Island facility would comply with Class I PSD increment standards and would not cause a significant impact to Air Quality Related Values ("AQRV"), including visibility, at Mingo Wildlife Area. Included within this demonstration was a cumulative impact analysis (for both PSD increment and visibility) that included the Lee Island facility and many other increment consuming sources from the region. Among these sources was the Peabody Energy Prairie Generating Station project in Washington County, Illinois. On a cumulative basis, Holcim demonstrated that the Lee Island project would have an insignificant impact on AQRVs, including visibility at Mingo. See Response to Federal Land Manager comments in Section 4.

Comment No. 114.

Several commenters stated that the facility's mercury emissions would have a significant affect on the region's environment or have adverse health impacts. Several commenters also stated that the department should require controls for mercury.

Response

Holcim disagrees with the comment. Additional controls for mercury are not required. See Response to Comment No. 142.

The emissions of mercury from the facility show compliance with HAP risk assessment modeling. In fact, the results of the HAP risk assessment modeling show that on a 24-hour basis, the resulting concentrations of mercury are only 1/3rd of the risk assessment level (RAL). On an annual basis, the resulting concentrations of mercury are 46 times smaller than the RAL.

Additionally, Holcim submitted to the department an analysis of the project on plants, animals and soils, in accordance with PSD requirements.

These studies concluded that no adverse effects due to ambient mercury concentrations are expected from the Lee Island plant.

The Preliminary Determination contained a detailed analysis of mercury (see page 52 of 79). The Preliminary Determination states:

“There will be mercury emissions from the operation of this cement kiln system. However, the evidence indicates that Holcim met every standard evaluated.”

The record is clear that mercury emissions from the facility have been analyzed in accordance with all regulatory requirements. No change in the final permit is required from this comment.

5.3. General Permit Language Comments

Comment No. 115.

One commenter requested removal of conditions in the permit that:

“...attempt to include pre-existing regulatory requirements by paraphrasing those regulations in the permit. For example, the requirements of the Portland Cement MACT are included by summarizing them within several conditions in the permit. In addition, conditions when a construction permit is required are defined. These provisions are ill-advised because they create potential conflicts with the regulation. They are superfluous as the company must comply with them regardless of their presence as a condition in the permit. Therefore they are neither necessary nor appropriate and we recommend they be removed.”

Response

On March 29, 2004, Holcim submitted a comment to the APCP requesting specific removal of Special Condition (1)(B), cited by the commenter as “conditions when a construction permit is required.” Holcim agrees with the comment in this regard. With specific regard to PC MACT, while Holcim in general agrees with the commenter that certain requirements are superfluous and do not require explicit statement, the provisions of the PC MACT rule are well-understood by Holcim and their inclusion, as currently drafted in the Preliminary Determination, do not require removal from the final determination.

Comment No. 116.

One commenter stated that it:

“concur[s] with the statement ‘Fabric filters are infeasible for the coal handling sources (emission points 109 through 114) due to safety considerations (explosion hazard).’ Coal by nature is combustible, and fabric filter dust collectors do not remove all of the coal dust from the bags through regular cleaning. The coal that is retained on the bags can exhibit low enough ignition points to self-combust and/or explode under certain operating conditions.”

Response

Holcim agrees with the comment and does not disagree with the department including the commenter's additional language in the final determination, if additional clarification regarding particulate control from coal handling equipment is required.

5.4. Environmental Organization Comments

On behalf of the Missouri Coalition for the Environment, Ozark Chapter of the Sierra Club, Webster Groves Nature Study Society, and American Bottom Conservancy, the Interdisciplinary Environmental Clinic ("Clinic") of Washington University School of Law provided written comments to the department on March 29, 2004. The Clinic's comments are grouped according to the following topics:

- 8-hour ozone and PM_{2.5} comments;
- 1-hour ozone comments;
- CALPUFF comments;
- General control technology comments;
- SNCR comments;
- SCR comments; and,
- Mercury comments.

Specific responses to these groups of comments are provided below.

5.4.1. 8-Hour Ozone Comments and PM_{2.5} Comments

Comment No. 117.

Will the Holcim plant cause or contribute to the ability of the St. Louis metropolitan area to achieve or maintain compliance with the NAAQS for ozone (measured over an 8-hour period) and PM_{2.5}?

Response

See Response to Comment No. 118. The department analyzed all relevant data and determined that the Holcim plant, as permitted, will not have an impermissible impact on the 1-hour ozone concentrations in the St. Louis area. MDNR was not required to consider any impacts based on the 8-hour ozone standard or fine particulate standard, both of which are not currently enforceable or implemented, as discussed in Response to Comment No. 118.

Comment No. 118.

The MDNR must deny the permit on the ground that Holcim has failed to demonstrate that it will not cause or contribute to ambient air concentrations in excess of the NAAQS for 8-hour ozone and PM_{2.5}. § 643.075.3, R.S.Mo., 10 CSR 10-6.060(6)(A)2, and 10 CSR 10-6.060(8)(C)3.

- A. Neither MDNR nor Holcim has fulfilled their respective duties to ensure that the proposed facility will not cause unacceptable air quality impacts.

- B. Holcim has failed to demonstrate, and MDNR has failed to determine, that the plant's emissions will not interfere with the attainment or maintenance of the NAAQS for ozone (measured over an eight-hour period) and fine particulate matter in the greater St. Louis metropolitan area.
- C. Holcim has failed to demonstrate, and MDNR has failed to determine, based on appropriate data and modeling, that the plant's emissions will not interfere with the attainment or maintenance of the NAAQS for either PM₁₀ or PM_{2.5}.
- D. The standards are "standards" under the statute and regulations, and have been since 1997.
- E. The MDNR may not proceed with the proposed Holcim permit unless and until it (1) assesses the impact of the facility on the region's air quality under the 8-hour ozone and fine particulate matter standards; and (2) ensures that the facility will not interfere will [sic] the region's ability to attain those standards.
- F. MDNR has acknowledged its obligation to consider the ozone NAAQS in assessing effects on air quality before issuing a PSD permit. In a letter dated February 11, 2003, Randy Raymond explicitly stated that MDNR is legally obligated to ensure St. Louis maintains the one-hour ozone standard and that MDNR is anticipating St. Louis being nonattainment under the eight-hour standard, with Holcim having a significant impact on the nonattainment area.
- G. MDNR publicly acknowledges that the PM_{2.5} NAAQS is a current standard, and that the St. Louis region already experiences air quality in violation of the standard.
- H. Holcim did not provide the MDNR with any estimates of its potential PM_{2.5} emissions, let alone an assessment of the impact of its emissions on the region's ability to attain the standard.
- I. Missouri precedent makes clear that the MDNR may not issue the permit without addressing the impact of the facility on the area's ability to attain the NAAQS for 8-hour ozone and PM_{2.5}. See Citizens for Rural Preservation, Inc. v. Robinett, Jr., 648 S.W.2d 117 (Mo. App. 1983).
- J. The fact that formal nonattainment designations have not yet been made, and revised SIPs required, does not relieve Holcim and the MDNR of the obligation to determine whether the facility will "cause or contribute to ambient air concentrations in excess of any ambient air quality standard." 10 CSR 10-6.060(8)(c)3.
- K. EPA relied upon the eight-hour standard in assessing "significant contribution" to ozone nonattainment for purposes of Clean Air Act § 126 rulemaking. 64 Fed. Reg. 28,250, 28,258-59 (May 25, 1999).
- L. EPA's reasons for applying the eight-hour ozone standard despite the absence of SIPs and formal nonattainment designations in the 126 context apply with equal force to the PSD permitting context.
- M. In light of the fact that a Holcim subsidiary, St. Lawrence Cement ("SLC"), analyzed the PM_{2.5} impacts of its proposed cement plant in Hudson, New York, certainly MDNR is capable of preparing and critiquing such an analysis for review.

Response

Holcim disagrees with the comment. Holcim has demonstrated, and MDNR has subsequently concluded, that the proposed emissions will not cause or contribute to a violation of any NAAQS. The 8-hour ozone and PM_{2.5} standards are not legally

enforceable and have not yet been implemented. MDNR properly based its decision on the currently enforceable NAAQS.

The commenter's suggestion that MDNR should have based its decision on standards which are not yet legally enforceable anywhere in the United States, and deny the permit on that ground, is incorrect.

Contrary to the commenter's assertion in "A", Holcim has provided, and MDNR has adequately considered, all relevant information necessary for MDNR to determine the impact of Holcim's proposed project on ambient air standards. Thus, MDNR has complied with the requirements contained within these sections of the Missouri Statutes and MDNR Regulations. Both § 643.075.3, R.S.Mo. ("the director ... may deny a construction permit if the source will appreciably affect the air quality or the air quality standards are being substantially exceeded") and 10 CSR 10-6.060(6)(A)2 ("a permit shall be issued pursuant to this section only if it is determined that the proposed source operation or installation will not ... interfere with the attainment or maintenance of ambient air quality standards") necessarily refer to the applicable air quality standards, which means such standards must be currently implemented and enforceable. MDNR has properly conducted its analysis under the currently implemented and enforceable ozone (1-hour) and particulate matter (PM₁₀) standards.

Commenter's statements above labeled "B", "D", "E", "F", "G", "I", "J", "K", and "L", in essence, each relate to the applicability of the 8-hour ozone and fine particulate matter ("PM_{2.5}") NAAQS. The 8-hour ozone and PM_{2.5} standards are *promulgated* "ambient air quality standards." However, the Environmental Protection Agency ("EPA") **has not yet begun to implement or require compliance with** the 8-hour ozone or PM_{2.5} standards. In fact, the 8-hour ozone and PM_{2.5} standards are not applicable, implemented air quality standards **for any area** of the United States. Part of the reason is that after "promulgation," these "new" standards underwent four years of litigation during which their status was uncertain. See, e.g., *Whitman v. American Trucking Ass'n*, 531 U.S. 457 (2001), *on remand*, 283 F.3d 355 (D.C. Cir. 2002); *Edwardsen v. U.S. Dept. of Interior*, 268 F.3d 781, 789 (9th Cir. 2001).

With respect to the 8-hour ozone standard, the EPA originally proposed to implement the revised standard quickly under the less strenuous Subpart I standards of Part D of Subtitle I of the Clean Air Act. However, such implementation strategy was the source of several legal battles. Although the Supreme Court largely upheld EPA's ability to *promulgate* the 8-hour ozone standard, it struck down EPA's original plan for **implementing** the standard. *Whitman*, 531 U.S. at 484. Therefore, even though the litigation has been concluded, the 1-hour ozone standard remains applicable. Moreover, the 1-hour ozone standard will continue to remain applicable until specifically revoked by EPA. See 40 C.F.R. § 50.9(b) ("the 1-hour standards set forth in this section will remain applicable to all areas notwithstanding the promulgation of 8-hour ozone standards under § 50.10" until EPA promulgates a determination that such standards do not apply).

Further, under 40 C.F.R. § 50.9(c), EPA has stayed its authority to revoke the 1-hour ozone standard until it has issued a final rule regarding implementation of the 8-hour ozone standard. EPA did not even begin that rulemaking until June 2, 2003, when it issued its "Proposed Rule to Implement the 8-Hour Ozone National Ambient Air Quality Standard." 68 Fed. Reg. 32802 (June 2, 2003). EPA did not make the draft regulatory

text for the proposed rule available until August 6, 2003, 68 Fed. Reg. 46536, and to date, the proposed rule has not been finalized.

Even when the final rule is issued, the 8-hour ozone standard will still not be implemented immediately, nor will the 1-hour ozone standard cease to exist. In the draft regulatory text for 40 C.F.R. § 50.9(b) introduced on August 6, 2003, EPA proposed that the 1-hour ozone standard will continue to apply for one year after the effective date of EPA's 8-hour ozone nonattainment designations, which are scheduled to be published by April 30, 2004. Thus, until at least April 30, 2005, the 1-hour ozone standard will remain applicable for all areas of the United States. Further, it is likely that SIPs will not be submitted and approved until 2008 or 2009.

Likewise, regardless of whether it is a "current" standard in the sense that it has been promulgated following notice and comment, the PM_{2.5} NAAQS is not yet enforceable and implemented. Shortly after EPA promulgated the PM_{2.5} NAAQS, which were to become effective on September 16, 1997, EPA issued an implementation memorandum requiring the "interim use of PM₁₀ as a surrogate for PM_{2.5} in meeting new source review (NSR) requirements under the Clean Air Act (Act), including the permit programs for prevention of significant deterioration of air quality (PSD)." See Memorandum from John S. Seitz, Director, OAQPS, *Interim Implementation of New Source Review Requirements for PM_{2.5}* (Oct. 21, 1997) ("Implementation Memorandum"). The Implementation Memorandum went on to explain:

For the reasons stated above, EPA believes that it is administratively impracticable at this time to require sources and State permitting authorities to attempt to implement PSD permitting for PM_{2.5}. The EPA has projects underway that will address the current technical and informational deficiencies, but it will take 3-5 years to complete these projects. *Until these deficiencies are corrected, EPA believes that sources should continue to meet PSD and NSR program requirements for controlling PM₁₀ emissions (and, in the case of PM₁₀ nonattainment areas, offsetting emissions) and for analyzing impacts on PM₁₀ air quality. Meeting these measures in the interim will serve as a surrogate approach for reducing PM_{2.5} emissions and **protecting air quality**.*

Id. (emphasis added). Further, the Implementation Memorandum indicated that "[w]hen the technical difficulties are resolved, EPA will amend the PSD regulations . . . to establish a PM_{2.5} significant emissions rate, and EPA will also promulgate other appropriate regulatory measures pertinent to PM_{2.5} and its precursors."

According to the Implementation Memorandum, the EPA has determined that compliance with the measures for analyzing PM₁₀ emissions serve the related purpose of reducing PM_{2.5} emissions and protecting air quality until the EPA can promulgate specific implementation standards for PM_{2.5}. Thus, while MDNR can consider the impacts of PM_{2.5} and the related public health concerns, MDNR must also protect against unfairly imposing standards rife with technical and informational deficiencies. This is the same conclusion reached in the Implementation Memo (62 Fed. Reg. 38,421) accompanying the 1997 promulgation of the 8-hour ozone and PM_{2.5} standards. Therein, President Clinton indicated that EPA should conduct its review of the standards prior to July 2002, and such "determination will have been made before any areas have been designated as 'nonattainment' under the PM_{2.5} standards **and before imposition of any new controls related to the PM_{2.5} standards.**" (Emphasis added.)

Further, the PM_{2.5} NAAQS are not legally enforceable standards for determining whether an action violates air quality standards under the Clean Air Act. See Spitzer v. Farrell, 761 N.Y.S.2d 137 (N.Y. 2003) (noting that there was no feasible methodology to determine the impact of PM_{2.5} emissions and relying upon EPA's former determination "that PM₁₀ NAAQS could be used as a surrogate to study PM_{2.5} until new protocols could be calculated and implemented").

The case of Citizens for Rural Preservation, Inc. v. Robinett, Jr., 648 S.W.2d 117 (Mo. App. 1983), issued in 1983, certainly cannot stand for the proposition that MDNR must assess Holcim's effect on the region's ability to attain the 8-hour ozone and PM_{2.5} NAAQS, standards promulgated in 1997, as the commenter suggests in "I". Indeed, to the contrary, the Robinett case discussed MDNR's obligation to consider the "present ambient air quality" and the "anticipated impact on ambient air quality" (i.e., the region's current air quality, under the currently enforceable standards, and the projected ambient air quality after the operation of the proposed new source commences). Nothing in the Robinett decision talks about "new" standards which have not yet been implemented. Likewise, in Morton v. Missouri Air Conservation Comm'n, 944 S.W.2d 231 (Mo. Ct. App. 1997), citing § 643.075.3, R.S.Mo., the Missouri court held that the proper determinations were: (1) "if the ambient air quality standards in the vicinity of the source are being exceeded" and (2) "the impact on the ambient air quality standards from the source." Again, the use of the present tense suggests that MDNR is to look at the currently enforceable standards, not those standards which have not yet been implemented.

Similarly, the commenter's reliance on EPA's consideration of the 8-hour ozone standard in analyzing "significant contribution" under its Clean Air Act ("CAA") § 126 rulemaking in "K" is particularly misplaced. While EPA did consider the 8-hour standard in making its findings, 64 Fed. Reg. 28,250, 28,258-59 (May 25, 1999), EPA issued an interim final stay related to that portion of its findings related to the 8-hour standard only a month later:

In light of the change of circumstances created by the court rulings, EPA believes it is appropriate to stay temporarily the section 126 [Notice of Final Rulemaking], while proceeding with a notice-and-comment rulemaking to address the issues raised by the ruling. In particular, with respect to the ruling on the 8-hour NAAQS, although EPA continues to believe it has a compelling basis in public health protection, **EPA believes that the court decision creates substantial uncertainty concerning the statutory authority both for revisiting the NAAQS and for implementing any such revised NAAQS.** Accordingly, EPA believes that the portion of the section 126 [Notice] that requires sources in upwind States to implement controls for the purpose of reducing their impact on downwind 8-hour nonattainment areas should be stated on an interim basis while EPA takes public comment on, and further considers, the matter.

64 Fed. Reg. 33,956, 33,957 (June 24, 1999) (emphasis added). Simultaneously, EPA proposed an indefinite stay to be finalized before the expiration of the interim stay. See 64 Fed. Reg. 33,962 (June 24, 1999) ("Given this position [that EPA should not continue implementation efforts under § 126 regarding the 8-hour standard], EPA believes that

the Agency should not now move forward with findings under section 126 based on the 8-hour standard.”). This indefinite stay was issued as part of a final rule on January 18, 2003. 65 Fed. Reg. 2674, 2685 (Jan. 18, 2003). Likewise, EPA has issued a final stay regarding its 8-hour NAAQS findings with regard to the NO_x SIP call. 65 Fed. Reg. 56,245 (Sept. 18, 2000) (“EPA continues to believe that it is imprudent to rely on the 8-hour NAAQS as an independent, alternative basis for the NO_x SIP call.”)

Relying upon or considering the 8-hour ozone standard and/or the PM_{2.5} standard is within the discretion of EPA. Likewise, MDNR can consider the information provided to it by Holcim pursuant to 10 C.S.R. 10.060(B)(6). In fact, as Commenter has pointed out, MDNR’s Draft Nonattainment Area Designation indicates MDNR is considering the future impacts of the 8-hour standard. Thus, the MDNR is also taking appropriate action to ensure future compliance. However, these standards have not yet been implemented and are not legally enforceable, and any application of standards that have not yet become legally enforceable would be inappropriate.

Commenter’s statement in “C” with respect to PM₁₀ is simply false. MDNR has considered the impacts of Holcim’s plant on attainment of the PM₁₀ NAAQS. Holcim directs commenter to pages 41-47 of the Draft Permit. Finally, with respect to “C”, “H”, and “M”, each of these comments further assume that the PM_{2.5} standard is enforceable and implemented. As discussed more thoroughly above, such is not the case. Therefore, MDNR was not required to consider any impacts related to PM_{2.5}, regardless of whether such impacts could be determined in Missouri, New York, or elsewhere.

Comment No. 119.

MDNR did not address PM_{2.5} in the BACT analysis.

Response

MDNR was not required to address PM_{2.5} in its BACT analysis. According to the New Source Review Manual,

“[i]ndividual BACT determinations are performed for **each pollutant subject to a PSD review** emitted from the same emission unit. Consequently, the BACT determination must separately address, for **each regulated pollutant** with a significant emissions increase at the source, air pollution controls for each emissions unit or pollutant emitting activity subject to review.” New Source Review Manual at B.4 (emphasis added).

PM_{2.5} is not currently a regulated pollutant subject to PSD review. See discussion in response to Comment No. 118, above. See also 10 CSR 10-6.010 and 10-6.040(4) (listing PM₁₀, but not PM_{2.5}, as having applicable ambient air quality standards).

5.4.2. 1-Hour Ozone Comments

Comment No. 120.

While acknowledging that the Holcim plant will cause significant impacts to St. Louis air quality under the old, one-hour ozone standard, the MDNR is nonetheless poised to

allow the plant to go forward anyway, using illusory and unlawful gimmicks that falsely masquerade as emissions reductions.

Response

Holcim disagrees with the comment. The Preliminary Determination included conditions specifically tailored to ensure a less than significant impact on the St. Louis region's air quality.

Special Condition (5) limits summer-time emissions of NO_x. This condition requires a "hard" reduction of source emissions of nearly 50 percent from the application values.

See also Response to Comment No. 86.

Additionally, the use of ERCs is a well-accepted technique of reducing impacts in nonattainment areas. See Response to Comment No. 121.

Comment No. 121.

MDNR cites no legal authority for this "creative" use of ERCs, as none exists.

Response

Holcim disagrees with this comment. The incorporation of ERCs into this PSD permit are consistent with Missouri's Emissions Banking and Trading rule 10 CSR-10.6.410 (1)(C).

"(C) The use of ERCs in conjunction with this rule is limited to the following:

1. Emissions offsets to satisfy New Source Review permitting requirements; or
2. For sources needing emission decreases from existing sources in their area of impact to mitigate air quality impacts from new sources or modifications under **prevention of significant deterioration (PSD) requirements.**" (Emphasis added).

Comment No. 122.

We can only assume that Holcim did not want their plan of purchasing dormant emission rights to become public because then the potential sellers might have realized their great value to Holcim and sought higher prices. We question MDNR's apparent role in facilitating Holcim's efforts.

Response

No response to this comment is required.

Comment No. 123.

The MDNR knows that Holcim will contribute unacceptably to ozone concentrations in the St. Louis area under the old, one-hour ozone air standard. The MDNR unlawfully failed to include permit conditions sufficient to render Holcim's impact insignificant

Response

The Preliminary Determination, with special conditions, is sufficient to ensure less than significant impact to ozone concentrations in the St. Louis area from this facility. Specifically, Special Condition (5) requires a limit on NO_x emissions in the summer ozone period sufficient to render Holcim's impact insignificant.

See Response to Comment No. 121.

Comment No. 124.

Even in the draft permit, MDNR acknowledges the likely impact of Holcim's emissions on ozone concentrations in the St. Louis region. "[T]he department concluded that ozone precursor emissions from Holcim as originally proposed would have a substantial impact on the St. Louis area and conditions to limit these emissions must be included in the permit."

Response

The commenter has taken the language of the Preliminary Determination out of context. The specific statement in the Preliminary Determination referred to the permit application emissions. The Preliminary Determination's special conditions limit emissions to a level that results in a less than significant impact on ozone concentrations in the St. Louis region.

The Preliminary Determination (Table 1: Emissions Summary, pg. 21) clearly identified the differences in NO_x emissions between the application and the "conditioned potential."

See Response to Comment No. 121.

Comment No. 125.

The permit contains no limit on Holcim's NO_x emissions during the ozone season.

Response

Special Condition (5) in the Preliminary Determination clearly limits the emissions of NO_x from the facility during the ozone season.

5.4.3. General Control Technology Comments

Comment No. 126.

The MDNR is poised to allow Holcim to build the facility without using available pollution control technology that would substantially reduce harmful emissions.

Response

Holcim disagrees with the comment. The Preliminary Determination requires the application of BACT, a technology whose selection is determined through a rigorous “top-down” process. The department correctly applied the “top-down” process to the selection of BACT for the criteria pollutants emitted in a significant amount.

See also Response to Comment No. 107.

Comment No. 127.

The permit does not require Holcim to use state-of-the-art technology to control emissions of nitrogen oxide.

Response

Holcim disagrees with the comment. The modern precalciner/kiln system with MSC selected for Lee Island represents state-of-the-art NO_x control technology. The Preliminary Determination requires the application of BACT for NO_x control. See Response to Comment No. 107. To the extent that the comment refers to SNCR, the permit does require its use in both the technology requirements (ICT) and in the emission limits (period emission limit for NO_x includes the use of SNCR). See Response to Comment No. 1. To the extent the comment refers to the use of SCR, see Response to Comment No. 138.

Comment No. 128.

MDNR does not even require Holcim to use pollution control technologies that are currently required of other cement plants.

Response

Holcim disagrees with the comment. The Preliminary Determination requires the application of BACT, a technology whose selection is determined through a rigorous “top-down” process. See Response to Comment No. 107. The department correctly applied the “top-down” process to the selection of BACT for the criteria pollutants emitted in a significant amount. See Response to Comment No. 1.

5.4.4. SNCR Comments

The commenter made several statements regarding SNCR. Many of these statements disagreed with the elimination of SNCR as BACT or its use as an ICT. However, it is important to note that in the end, the commenter’s letter stated:

“We present these points [regarding SNCR] not to suggest that the Holcim permit should specify SNCR as BACT, but to demonstrate the fatal flaws in the MDNR’s BACT determination and the inappropriateness of including SNCR as “innovative control technology.”

It is clear that the comments regarding SNCR as BACT were not intended by the commenter to result in revisions to the permit. In this regard, no specific response is required by Holcim to these points. Unfortunately, the commenter made several assertions in their letter before altering its position in the end. In order for the permit record to be a complete and accurate representation of the facts, Holcim provides responses to these Comments (Nos. 129 through 137) despite the commenter’s disclaimer.

Comment No. 129.

The draft permit offers no assurance that Holcim will employ SNCR beyond an initial experimental period.

Response

Holcim disagrees with the comment. The use of SNCR as an ICT has been clearly documented in the record. See Response to Comment No. 1. The emission limits in the Preliminary Determination are not subject to change regardless of the outcome of the SNCR ICT testing and evaluation program. The SNCR ICT testing and evaluation program will determine the conditions under which SNCR is the most effective at reducing NO_x, and the conditions under which its use must be reduced to maintain compliance with the state and federal opacity standard.

Comment No. 130.

Holcim views the implementation of SNCR as an experiment.

Response

See Response to Comment No. 129.

Comment No. 131.

The permit contains no binding terms and conditions designed to ensure that SNCR is properly tested and employed.

Response

Holcim disagrees with the comment. Special Condition (3)(A)5. of the Preliminary Determination requires department approval of the testing and evaluation protocol prior to Holcim commencing the ICT program. This condition specifically ensures that SNCR will be properly tested and employed.

Additionally, Special Conditions (5) and (3)(A)4. of the Preliminary Determination are emissions limitations of the facility regardless of the outcome of the SNCR ICT program.

Comment No. 132.

MDNR is requiring the Continental Cement Company in Hannibal, Missouri to install and implement SNCR for control of NO_x emissions from its preheater, precalciner cement kiln. Furthermore, SNCR is required under BACT at the Lehigh Cement Company – Mason City Plant in Iowa to limit NO_x emissions. Both the Iowa and Missouri plants are operating with MSC kilns similar to the proposed Lee Island project.

Response

See Response to Comment No. 6.

Comment No. 133.

MDNR's BACT analysis is overly concerned with minor changes in MSC systems in coordination with SNCR. MDNR may not use this argument to eliminate better pollution controls.

Response

Holcim disagrees with this comment. The permit record is clear that the department properly applied the "top-down" BACT review process.

See Responses to Comments No. 1, 2, 3, 6, 7 and 10.

Comment No. 134.

SNCR was inappropriately disregarded in the fourth step's assessment of energy, environmental and economic impacts.

Response

See Responses to Comments No. 1, 2, 3 and 4.

Comment No. 135.

The detached plume could be addressed by other control technologies, such as adsorption or wet lime scrubbing.

Response

The factors influencing the creation of detached plumes are not so easily solved as the commenter infers. The approach taken by the department in the Preliminary Determination regarding the use of SNCR as ICT is meant to optimize the NO_x reduction, while preventing the formation of detached plumes.

Comment No. 136.

MDNR caved in by changing its original BACT determination from SNCR to Holcim's urges for MSC.

Response

Holcim disagrees with the comment. The only BACT determination of relevance is the one contained within the Preliminary Determination and issued for public comment with the draft permit on February 22, 2004.

The department drafted a preliminary BACT analysis in September 2002. This finding was shared with Holcim but not incorporated into a draft permit or any determination for public review or comment. Following notification of this preliminary analysis, Holcim provided the department with additional BACT information in a November 20, 2002 submittal *Response to Preliminary Best Available Control Technology Determination*. This document contained a point-by-point response to the department's preliminary BACT analysis and also provided a new BACT analysis for the permit application. This revised portion of the application represented an update of the original BACT determination (from the May 2000 application) as well as an integration of BACT-related correspondence between Holcim and the department over the nearly three-year period between the two submittals.

It was after careful and independent consideration of the revised information submitted by Holcim, as well as all other relevant information available to it, that the department revised its initial preliminary BACT analysis. The department's current BACT determination, as provided in the Preliminary Determination reflects the culmination of its review of all relevant information in the record, including information submitted in response to its preliminary analysis. MDNR has provided a clear and reasoned justification for its selection of BACT through the rigorous "top-down" approach.

See also Response to Comment No. 1.

Comment No. 137.

We present these points [regarding SNCR] not to suggest that the Holcim permit should specify SNCR as BACT, but to demonstrate the fatal flaws in the MDNR's BACT determination and the inappropriateness of including SNCR as "innovative control technology."

Response

Holcim disagrees with this comment. The permit record is clear that the department properly applied the "top-down" BACT review process. See Responses to Comments No. 1, 2, 3, 6, 7 and 10.

5.4.5. SCR Comments

Comment No. 138.

The Clinic submitted two letters that included comments that claimed that SCR is a feasible technology for application to Lee Island and that, therefore, the permit as presently drafted does not require BACT. For example, the Clinic stated:

“MDNR allowed Holcim to eliminate a currently applicable and available NO_x control technology, SCR.”

“The MDNR failed to review critically Holcim’s protestations that it was incapable of employing pollution controls that have been successfully used [sic] a cement plant in Germany, and widely used in power plants and other industries in the US, other agencies have done so and, in the face of that information, the MDNR cannot lawfully issue the draft permit.”

“Because SCR would be far more effective in controlling Holcim’s emissions, any permit that the MDNR issues for the Lee Island Plant should specify SCR as BACT.”

“...the permit as presently drafted falls woefully short of the legal requirements that new facilities of this magnitude employ Best Available Control Technology.”

In support of these claims, the Clinic attached to one of their letters a number of documents submitted to the New York Department of Environmental Conservation regarding St. Lawrence Cement’s Supplemental LAER Analysis (hereinafter the SLC Report).

The following response addresses these comments. Within this response are several “sub-comments” that were contained within the attachments to the Clinic’s comment letter. These “sub-comments” are addressed with specific responses to identify the factual inaccuracies contained within the documents the Clinic is relying on for their evidence.

Response

To minimize the formation of NO_x and to control the NO_x that is formed, Holcim has incorporated all demonstrated design, control, and operational features into the proposed Lee Island cement manufacturing plant. The December 2003 update to the Lee Island BACT analysis showed that SCR is not BACT for cement manufacturing for the following reasons:

- SCR is not a demonstrated technology for cement plants.
- SCR is not an available technology for application to the Lee Island cement manufacturing plant.
- SCR is not an applicable technology for the Lee Island cement manufacturing plant.
- SCR is not currently a technically feasible NO_x control option for Lee Island.

BACT for NO_x on the Lee Island cement manufacturing plant is MSC with low-NO_x burners. In addition to MSC, Holcim has agreed with the MDNR to go beyond BACT and evaluate SNCR as a NO_x reduction technology.

Assertions in the documents provided by the commenter (1) are contradicted by publicly available certified emission data, (2) rely heavily on hearsay and one SCR vendor’s unproven claims and merit-less proposal to supply an SCR, (3) are not supported by any data to show a demonstrated application of SCR on a gas stream with similar

characteristics to Lee Island, (4) display a lack of knowledge and experience with cement kiln systems, and (5) and do not change the conclusions reached by the APCP in the Preliminary Determination for the Lee Island Facility.

The following will address the claims made in the attachments provided by the commenter.

Comment No. 138 A.

Several of the attachments include the claim that the SCR installation at the Solnhofer, Germany cement facility is achieving 82% NO_x reduction efficiency.

Response

Utilizing the certified emission reports submitted from 1992 to 2002 inclusive by Solnhofer to the German regulatory authorities, the estimated NO_x reduction efficiency by the Solnhofer SCR system in 2002 was around 40% or less for each year (on an annual average basis) and only 34% compared to the overall period.

The commenter's purported 82% NO_x reduction efficiency was based on an unsupported statement made by an SCR vendor, KWH, and is contradicted by publicly available and long-term CEMs data. Friends of Hudson ("FOH") assert that to calculate NO_x reduction one must compare SCR inlet concentration to outlet concentration. The tremendous flaw in their proposal is that long-term and certified SCR inlet NO_x concentrations are not publicly available and therefore, cannot be used to reliably calculate sustained NO_x reduction efficiency. (Even if this data were available, which it is not, any discrepancy between it and the CEMS data at the stack would render it suspect.) The best estimate, therefore, of the Solnhofer SCR efficiency is calculated from the only "hard data" available – certified emission reports.

In an attempt to defend their unsupported assertions and explain the huge discrepancy between the actual 40% or less NO_x reduction efficiency and the vendor's claims of 82%, the FOH document, again unsupported, states that Solnhofer was operating an "effective" SNCR system in 1999 and 2000. However, once again the publicly available and certified emissions information contradicts this argument. A review of the emission compliance histograms submitted by Solnhofer to the German regulatory authorities shows that NO_x emissions remained fairly consistent from 1992 through 2000, therefore, an SNCR was either not utilized or was minimally effective. (See SLC Report Attachment 1 Document 8.) Nonetheless, SLC's consultant calculated average NO_x emission data for each of the available years (i.e., 1992 through 2002). The result of this analysis was that the Solnhofer Plant's NO_x emissions for 2002 (when the SCR system was reportedly operating) achieved a NO_x reduction efficiency of around 40% or less compared to the emissions for each of the years between 1992 and 2000 (when no SCR system was reported to be in operation). Interestingly, the 2002 NO_x emissions were only 34% below the emissions during the 1992 through 1994 period (when no SCR or SNCR system was reported to be in operation).²⁵

Comment No. 138 B.

The FOH document states that application of SCR to a cement plant is technically feasible because the various technical obstacles to application of SCR identified have

²⁵ Note that the earliest the Solnhofer facility could have been operating an SNCR was late 1995, as the facility received their permit to trial SNCR in November 1995. See SLC Report Attachment 1 Document 5.

been resolved at other installations, are not as critical as claimed, and/or are correctable with slight process modifications.

Response

The two key concepts in determining whether an undemonstrated technology is feasible are: “availability” and “applicability.” This comment primarily addresses applicability. The comment is not supported by any data to show a demonstrated application of SCR on a gas stream with similar characteristics to Lee Island in order to validate their claim of resolved technical difficulties and displays a lack of knowledge and experience with cement kiln systems.

The only large-scale SCR installation on a cement manufacturing plant in the world is the Solnhofer Portland-Zementwerke AG SCR demonstration project. The Solnhofer plant, located in Solnhofen, Germany, has a lepol rotary cement kiln with a 4-stage single string preheater tower. Funded in part by the German Environmental Ministry, in 2000 the Solnhofer cement plant installed a large-scale demonstration SCR system. The system reportedly became operational in 2001. The high-dust SCR system, located downstream (i.e., beyond the exhaust gas exit) of the last preheater cyclone and prior to other air pollution controls, is not a “tail-pipe” technology but is instead an “add-on” technology inserted within the cement manufacturing process.

Responses to the comment’s specific examples are summarized briefly below:

(a) Catalyst poisoning

FOH claims that various oil- and coal-fired plants have successfully used SCR despite concentrations of various catalyst poisons higher than those expected at a cement plant such as the proposed project. This conclusion ignores the significant differences between utility boilers and cement kilns. FOH specifically cites a KCPL, Carolina Power & Light, and a Somerset, New Jersey plants as examples. The gas characteristics of the examples cited, however, are not even close to being comparable to the gas characteristics at the exit of the preheater tower (the potential location of high-dust SCR technology) of SLC Greenport or Lee Island. Additionally, The KCPL installation is only achieving 55% reduction in NO_x.

The KCPL has an SCR inlet NO_x concentration one-fourth that of Lee Island, has a much higher temperature, contains half of the dust loading, low sulfur, one-fifth the CaO loading, etc., compared to the preheater exit gas stream conditions at Lee Island.²⁶ The Somerset plant gas stream has only one-fifth of the dust loading and alkali poisons expected at Lee Island’s preheater exit and the Carolina Power & Light SCR system SCR inlet contains a tiny fraction of the dust loading expected at Lee Island’s preheater exit. As recognized by one of FOH’s vendor responses, Hitachi, the conditions of a cement plant such as Lee Island are too challenging and are outside of vendor coal-fired boiler experience. Hitachi predicts that these challenging conditions will likely result in catalyst deterioration and possibly significant plugging and erosion.²⁷

²⁶ All concentrations discussed here are those in the gas stream as it exits after the upper most stage of the preheater tower. This location is prior to the gas stream passing through add-on air pollution control technologies and thus, the concentrations are not representative of stack emissions.

²⁷ See email dated March 23, 2004 from Howard Franklin of Hitachi to Frank Sapienza regarding SCR for cement plant.

As particulate matter loadings in boilers are typically lower than a cement plant the catalyst, therefore, will be exposed to much lower total alkali content in particulate matter than would be the case at a cement plant high-dust SCR catalyst installation. Furthermore, the particulate matter in a utility boiler passes through the combustion chamber, and a portion of the ash is present in the form of fused, glass-like particles and unavailable to poison the catalyst. Conversely, in a cement kiln, the alkali is vaporized in lower temperature regions of the kiln and are not fused, but instead the vapors heterogeneously nucleate to the surfaces of entrained kiln feed particles. On the surfaces of these particles, the alkali are readily available to poison the SCR catalyst.

FOH argues that the performance of SCR systems on coal-fired boilers demonstrates that water soluble alkali particulate matter does not cause catalyst deactivation. This opinion is based on an observation that acidic water soluble deposits (“low temperature deposits”) can accumulate on the economizer and air preheater heat exchange surfaces of coal-fired boilers. The presence of these acidic deposits is not relevant to the issue of water soluble alkali (i.e., basic deposits) in an SCR.

(b) Catalyst plugging and fouling

FOH claims that because the Solnhofer facility operates at a dust loading higher than that anticipated for a cement plant such as Lee Island, catalyst plugging and fouling have been resolved. There are significant gas stream characteristic and operational differences between Solnhofer and the proposed facility, however, which make the Solnhofer experience inapplicable to Lee Island.

The most compelling difference is Solnhofer’s SCR inlet SO₂ concentration estimated to be approximately 3% of the SO₂ levels anticipated at Lee Island’s preheater exit.²⁸ An elevated presence of SO₂ at the SCR inlet increases the likelihood of catalyst deactivation due to masking or plugging from the formation of calcium sulfate (“CaSO₄”). The rate of deactivation from masking is dependent on the amount of SO₃ available to react with the calcium compounds in the catalyst pores. SO₃ is formed when SO₂ present in the gas stream is oxidized both in the process and across the catalyst bed. Higher SO₂ concentration at the catalyst results in an elevated potential for masking and deactivation. FOH’s claims fail to recognize concerns expressed in an email to their consultant by Hitachi which states, “CaO loading is 15-30 times of Powder River Basin (“PRB”) application. So, the masking is an extremely large and unpredictable problem. We anticipate that the catalyst will deteriorate very quickly. It is not possible to evaluate the catalyst life and offer any guarantees.” Holcim shares this opinion with Hitachi. SCR catalyst masking-related deterioration is a significant unresolved technical difficulty.

FOH claims that the SO₂ levels at Solnhofer’s SCR inlet were underestimated by SLC so that this difference in the gas stream characteristics is not really an issue. To support this claim, FOH’s document attempts to back-calculate the SO₂ loading at the Solnhofer

²⁸ SCR systems use ammonia in the presence of a catalyst to chemically convert NO_x to molecular nitrogen and water vapor. The SCR catalyst causes these reactions to occur in the temperature range of approximately 300°C to 400°C. This is above the temperature of typical cement kiln air pollution control exhaust gas. Therefore at a cement plant, a high dust SCR catalyst beds, such as the Solnhofer installation, must be located prior to any baghouse or SO₂ scrubbers in a part of the process where the gas temperatures are in the necessary range.

SCR inlet but, instead displays their complete lack of knowledge of a cement kiln system. The most obvious error is their contention that the evaporative cooler-fabric filter on a cement exhaust is analogous to a dry sulfur scrubber with a SO₂ removal of 90%. This is not the case, actual SO₂ scrubbing in a downstream evaporative cooler-fabric filter is very low. Removing this “far-fetched” factor from the calculation results in a SO₂ level at the SCR inlet of at most 40 mg/Nm³..

FOH goes on to suggest that the “sticky deposits” identified as a possible plugging concern appear to be a fan blade problem unrelated to operation of the SCR system. On the contrary, FOH’s suggestion does not match the experience of cement plant operators. The presence of calcium and of sulfur oxides in the gas stream of preheater/precalciner kilns are well known contributors to sticky deposits that become a hard, persistent scale at any point of impingement of the gas stream in the correct temperature range. It is only logical to assume that if these deposits form on fan blades and other points of impingement that they can certainly form on a catalyst bed.

The risk of catalyst deactivation and equipment damage as a result of elevated SO₂ concentrations at the inlet of the catalyst cannot be overstated. Significant NO_x reduction coupled with the SO₂ levels predicted at Lee Island are beyond the scope of Solnhofer’s SCR experience.

(c) SO₂ oxidation

FOH implies that the presence of high SO₃ concentrations has not led to catalyst deactivation at facilities with high calcium and high sulfur flue gases such as those likely to be found at Lee Island and that the formation of ammonium salts can be prevented by maintaining SCR inlet temperature at an appropriate level. Yet again, no data is provided on a gas stream with high calcium and high sulfur to support this implication. Additionally, the Massachusetts Department of Environmental Protection (“MADEP”) claimed that recent catalyst technology resolves the concerns about SO₂ oxidation. They attached a paper by Babcock-Hitachi in support of this claim. However, the paper very clearly cautions that

“the activity of this new catalyst drops off rapidly at lower temperatures. Thus this catalyst may not be appropriate for boilers operated with large load swings.”

This catalyst is inappropriate for Lee Island in that the operating temperature range for this catalyst 371°C to 415°C is significantly higher than the temperatures of the preheater tower exhaust.

(d) Gas temperature

The FOH and MADEP documents suggest to bypass a quantity of gas from the last cyclone of the preheater tower in order to provide a higher temperature into the SCR in an effort to control the formation of ammonium sulfate salts in the SCR catalyst. Unlike a utility boiler which may be able to divert a portion of gas to increase SCR temperatures, significant technical challenges are inevitable with this proposal for a cement plant. In the Lee Island case, this duct is the introduction point for the feed to the preheater tower. Such a bypass will reduce the fuel efficiency and productivity of the kiln system and greatly increase the dust load to an SCR catalyst bed. The feasibility of

a sudden change to the high-dust gas flow at this location could itself become a research project to overcome complexities associated with disruptions of the feed distribution, plugging of the material ducts, material build-ups in the gas ducts and other problems. In itself this research project would make SCR technology experimental and unproven.

(e) NO_x inlet concentrations and ammonia slip

FOH comments that experience at other facilities suggests that NO_x inlet concentration variability does not pose a threat to successful application of SCR. FOH also claims that a reservoir of unused ammonia on the surface of the catalyst enables SCR systems to handle sudden peaks in inlet NO_x concentrations, thereby minimizing NH₃ slip. In support of this claim they cite vendor proposals and examples of coal-fired boilers and Solnhofer achieving significant NO_x reductions while producing minimal NH₃ slip.

The FOH comment stating that NO_x concentration spikes will be managed because there is a reservoir of ammonia on the catalyst surface appears to be speculative. Holcim is unaware of any published data that quantifies the extent of the unused ammonia on the catalyst surface and compares this to the duration and magnitude of NO_x concentration spikes in cement kilns.

Once again, FOH has provided no evidence of an SCR experience at other facilities with similar gas stream characteristics to Lee Island. Therefore, their comment is purely speculative. The use of coal-fired boilers as support is further inappropriate in that the high short-term variability in NO_x concentrations at a cement plant relative to a boiler application have been well documented. Solnhofer experiences also can not support FOH's statements as that facility is achieving only modest NO_x reductions. Also, Holcim is not aware of any certified long-term NH₃ slip data publicly available from this facility that could support the claims of minimal NH₃ slip. Lastly, vendor claims cannot be considered as credible evidence, especially when those vendor claims are part of a non-responsive bid and/or are not supported by any documented experience.

(f) Process start-up, shutdown and malfunction events

Comments from MADEP and FOH suggest that concerns regarding gas conditions that could deactivate or otherwise damage the SCR are easily addressed by an SCR bypass when such conditions occur with a corresponding permit condition that allows NO_x emission limits not to be met under said conditions. This comment is environmentally irresponsible given the unresolved SCR technical issues that exist. For instance, the expected sulfur levels at the normal operating temperatures for Lee Island are likely to deactivate the catalyst through the formation of ammonium sulfate salts. Therefore, applying the MADEP and FOH suggestion, the SCR would be bypassed most of the time.

Comment No. 138 C.

FOH claims that (1) given the reluctance to consider SCR due to its limited use in the cement industry, it is very curious that there are not the same concerns for the untested combination of SNCR and MSC; and (2) experience with SCR in power plants is well established and does not involve the operational difficulties of an SNCR system.

Response

The fundamental difference in risk for Lee Island between the agreed to, innovative combination of MSC/SNCR and the comment's insisted upon, experimental SCR is better understood keeping in mind two primary, yet distinct concepts. These concepts are: (1) Technical feasibility, or the "ability to perform;" and (2) The "level of performance" of the technology. While the first concept is more mechanical in nature (i.e., will it work), the second is related to potential reduction efficiency.

First, Holcim has agreed to evaluate SNCR in combination with MSC as a NO_x reduction ICT. While both the combination of MSC and SNCR and the use of SNCR under domestic regulatory conditions (e.g., opacity standards) is innovative, each of the technology's "ability to perform" reliably in the environment of a cement kiln has been demonstrated repeatedly.²⁹ The same cannot be said for SCR. SCR's "ability to perform" in a gas stream similar to Lee Island's is not demonstrated, as discussed extensively in Response to Comment 138 B. The sparse technical information available on Solnhofer is wholly insufficient to determine the long-term performance or reliability of the SCR system or catalyst. The need for evaluation of MSC/SNCR at Lee Island is not related to whether the combination of MSC/SNCR technologies will work in the operating environment associated with the gas stream but, instead to what "level of performance" can be achieved (or how significant the NO_x reductions will be) by this combination of technologies at Lee Island without creating undesired adverse consequences, such as opacity problems.

Contrary to the second part of this comment, operationally SNCR and SCR share many of the same issues (i.e., ammonia injection locations, molar ratio, gas distribution) but SCR system operational difficulties are then compounded due to need for a catalyst bed and a comparatively narrow operating temperature window. The mechanics of the two systems are such that an SNCR systems exposes to the gas stream only a few easily replaceable, ammonia injection nozzle heads, while SCR places an entire catalyst bed directly in the path of the gas stream. The SCR designed, intimate contact with the gas stream exposes the vulnerable catalyst bed to high dust loads, temperature swings, high SO₂ concentrations, alkali and calcium compounds. Simply put, SCR involves a high risk of mechanical failure while SNCR involves low risk of mechanical failure. Additionally, as discussed in the comment 138 B response, differences in the gas stream characteristics between utility boilers and cement plants makes technology transfer inappropriate.

²⁹ The combination of MSC and SNCR operating simultaneously has only been tried experimentally in Europe, and SNCR alone has only been demonstrated in Europe where opacity regulations are not an issue. Combining MSC and SNCR technologies in simultaneous operation has only been tried in Europe on an experimental basis, Holcim proposed that installation and operation of SNCR in combination with MSC is an innovative control technology (ICT) under the provisions of the Prevention of Significant Deterioration regulations. In prior submittals to the APCP and to EPA, Holcim has detailed the extensive technical reasons why the proposed SNCR/MSC combination is not a technology that can be defined as BACT due to potential adverse environmental impacts. Specifically, Holcim has shown that there is a high likelihood for formation of a visible detached plume during certain atmospheric meteorological conditions. Occurrence of such a detached plume would be a violation of SIP and federal MACT opacity standards.

Comment No. 138 D.

The FOH, MADEP and Connecticut documents criticize the SLC's SCR bid process suggesting that SLC pre-ordained the "no firm bid" results it obtained.

Response

The two key concepts, as stated above, in determining whether an undemonstrated technology is feasible are: "availability" and "applicability." This comment primarily addresses availability.

SLC prepared a detailed engineering bid specification package and in August 2003 issued a request for proposals to four established SCR vendors, including KWH. SLC intended to test vendor's claims of commercial availability and ability to provide guaranteed performance. SLC also attempted through the issuance of their Bid Specification to obtain additional technical data and information regarding the applicability of SCR to the Greenport Project.

SLC's bid specification is criticized by FOH as being unreasonably strict. On the contrary, SLC reflected the reality of the gas stream characteristics at the Greenport Project, not to discourage vendors, but to provide the vendors with the stringent operating conditions under which an SCR system would be required to operate. Some of the key performance targets set in the bid specification were established based on KWH's claims made to the U.S. EPA Region 2 in an email dated June 4, 2003. Importantly, SLC provided the vendors the opportunity to take exception to any of the requirements of the bid specification as long as an explanation was provided as to why the exception was necessary. Even though FOH takes issue with the concept of exceptions in a specification, it is a common practice in multi-million dollar pollution control bid processes.

SLC additionally asked responding vendors to provide documentation of their experience on a similar application to Greenport to support their claims. This is far from being unreasonable and was in fact in response to a request from New York State Department of Environmental Conservation. Compellingly, no such data was provided by any of the vendors including KWH or Alstom.

FOH further commented that the liquidated damage provisions of the required guarantees were too onerous. However, the one proposal FOH received with their altered specification refused FOH's liquidated damage provision and instead proposed provisions more penalizing than those originally proposed by SLC. While the 100% failure to perform guarantee suggested by KWH is a step in the right direction it should not be perceived as overwhelming confidence by KWH. Specifically, KWH is unwilling to accept the liquidated damage cap set at the cost (presumably of NO_x credits) of excess NO_x emissions released to the environment. If, in the end, a KWH supplied SCR system is a complete failure or is unable to perform at the required levels, the facility would be faced with a potential non-compliance situation.

Another claim made by FOH, MADEP and Connecticut was that SLC did not work with vendors. This is not substantiated by the facts, SLC addressed all questions put forward in a timely and appropriate manner and shared the responses with all vendors. SLC did grant a request for an extension of time and provided the additional time to all vendors. Further, the two vendors that did provide an initial proposal were informed specifically as to where their proposals were deficient and given a second chance to provide a firm proposal that SLC could evaluate.

No firm bids were received in response to the SLC bid process, but not because the specifications were too strict, guarantees requested too penalizing, or because SLC was unwilling to work with vendors but, because vendors are not in a position to make a commercial offering of SCR technology applicable to a gas stream with the characteristics of the Greenport Project (or Lee Island) at this time.

Comment No. 138 E.

FOH commented that their ability to obtain a revised proposal from KWH to supply an SCR system to SLC demonstrates that SCR is commercially available.

Response

KWH originally refused to bid an SCR system for the Greenport Project stating:

“There are differences in cement plant system technology depending on the country it is applied and can differ from plant to plant in the same country. These differences result in differences in effluent gas conditions, process conditions, gas constituents, and particulate characteristics and concentrations.” Consistent with these technical differences, and most importantly, KWH unequivocally stated that ***“[T]he Solnhofer plant cannot be used as a benchmark to extrapolate the SCR catalyst design for the Greenport Project.”*** (emphasis added).³⁰

The KWH revised proposal obtained by FOH was not in response to the SLC bid specification but instead to a FOH altered specification – rendering it meaningless to SLC. Additionally, KWH provided no data beyond hearsay and no explanation to support their change in position.

Most troubling however is KWH's rejection of a guarantee regarding SO₂ oxidation levels along with their unsubstantiated claims that SO₃ and calcium compounds will not present a problem for operation of the SCR. First, the higher sulfur dioxide concentrations at the Lee Island Facility, and the resultant SO₃ formed across an SCR catalyst bed, can result in visible and secondary emissions that would not be expected to occur at the Solnhofer Facility. The SO₃ can react to form the secondary emission sulfuric acid mist (H₂SO₄) that, in addition to direct environmental risk and downstream equipment damage, may result in the formation of visible emission plumes. Visible emission plumes can also result from alkali bisulfate/alkali sulfate (“ABS/AS”) formation, the levels of which are dependent on the extent SO₃ is available to react with unreacted ammonia in the gas stream. Secondly, it is well documented that an elevated presence of sulfur oxides at the SCR inlet increases the likelihood of catalyst deactivation due to masking or plugging from the formation of calcium sulfate (“CaSO₄”). The rate of deactivation from masking is dependent on the amount of SO₃ available to react with the calcium compounds in the catalyst pores.

Conclusion

Lee Island's gas stream characteristics are beyond the scope of past SCR experience and unresolved technical issues result in the conclusion that SCR is not applicable to this facility. As the SLC bid process demonstrated, vendors are not in a position to make a commercial offering of SCR technology applicable to a gas stream with the

³⁰ October 3, 2003 letter from Thomas Luger, CEO, KWH Catalysts to Phillip Lochbrunner, St. Lawrence Cement.

characteristics of Lee Island at this time. SCR is thus technically infeasible for Lee Island based on both applicability and availability.

In addition to the above, Holcim is submitting as Attachment 1 St. Lawrence Cement's Response to Comments on SLC's SCR Report dated April 7, 2004 which specifically addresses in detail the MADEP, State of Connecticut, KWH, and Friends of Hudson documents provided by the Clinic. Holcim believes that the following conclusion made in the SLC Response to Comments applies to an SCR application to Lee Island as well.

"The unresolved technical issues together with the significant differences in the gas streams between Solnhofer and Greenport, or a utility boiler and Greenport, render the suggested application of SCR at the Greenport Project environmentally risky and highly experimental. In other words, there is a very real risk that application of SCR to the Greenport Project will be a complete failure, and an even larger risk that if the technology does work, it will perform at a level below the performance level that will be achieved by the combination of MSC and SNCR."

Holcim has incorporated all demonstrated design, control, and operational features into the proposed Lee Island cement manufacturing plant and has agreed to go beyond BACT with SNCR as an additional, innovative control technology. The Preliminary Determination's BACT analysis for the Lee Island Facility remains unequivocally accurate in both its analysis and conclusions.

No modification to the final permit is required by this comment.

5.4.6. CALPUFF Comments

Comment No. 139.

While acknowledging that the appropriate test has not yet been performed for determining whether the Holcim plant will cause a violation of the NAAQS and/or maximum allowable increment for PM₁₀ in the vicinity of the plant, the MDNR is nonetheless poised to issue the construction permit and address that issue later – when of course it may well be too late.

Response

Holcim disagrees with this comment. See Response to Comment No. 140. The appropriate modeling has been performed to demonstrate compliance with NAAQS and PSD increment standards for PM₁₀, as outlined in the Preliminary Determination.

Comment No. 140.

MDNR may not rely on the use of industrial source complex short-term ("ISCST3") dispersion modeling with Lambert Airport data as sufficient to support a permit decision, rather the CALPUFF modeling needs to be complete before the PSD permit is issued for Holcim.

By issuing a draft permit in this case without obtaining an accurate impact analysis, the draft permit violates the Missouri Air Conservation Act and the federal Clean Air Act.

- A. The ambient air quality analysis for PM₁₀ contained in the draft permit is based on an inadequate model, the Industrial Source Complex Short Term, Version 3 (ISCST3).
- B. Both the EPA and MDNR have denounced the ISCST3 model as insufficient.
- C. The draft permit should not grant the company the ability to start building the plant before first analyzing the results of a CALPUFF study.
- D. As the requirements for a CALPUFF analysis now stand in the draft permit, MDNR's position abruptly deviates from its stance on this issue since August 2001.
- E. Even though impact analyses are case-specific, a recent situation in New York proves on-site terrain differences can result in significant differences in impact analyses.
- F. In this case, MDNR will act in violation of the federal and state air pollution laws if it relies on the current modeling analysis for PM₁₀.
- G. MDNR cannot make a permit decision based on an unreliable impact analysis.
- H. Holcim's impact analysis must prove – without significant uncertainty – that the constructed facility will not generate particulate matter emissions that violate ambient air quality standards.

Response

No change in the final permit is necessary in response to this comment. The APCP determined that the submittal of a CALPUFF modeling study was not required prior to the draft permit being issued for public notice. EPA, the original commenter on this issue, expressed satisfaction at the department's handling of the issue. See Comment No. 60.

The submission of a supplementary CALPUFF modeling demonstration is not a regulatory requirement under 10 CSR 10-6.060, *Construction Permits Required*, Section (8) Attainment and Unclassified Area Permits, nor under 10 CSR 10-6.060 Appendix F, Air Quality Models. A demonstration of ambient air quality standards and PSD Increment compliance using a guideline model and following an approved modeling protocol was provided by Holcim and approved by the APCP. In this case, the regulatory requirement of demonstrating compliance via preconstruction modeling was achieved using the ISCST3 air dispersion model with five (5) years of meteorological data in accordance with a dispersion modeling protocol approved by the APCP on March 8, 1999.

During the public comment period, Holcim provided the department with a comment requesting removal of the CALPUFF condition from the construction permit. This comment included a supplementary CALPUFF modeling demonstration. This supplementary CALPUFF analysis was for a sub-set of data representing seven (7) months of on-site meteorological data.

Holcim has continuously maintained the position, since the original CALPUFF comment was made by EPA, that using CALPUFF for this exercise will most likely predict *lower* concentrations than the ISCST3 modeling, which has already demonstrated compliance with all ambient air quality and PSD increment standards. Holcim provided the APCP with a detailed analysis of this potential in a March 3, 2003 letter.

The results of the supplementary CALPUFF modeling analysis were supportive of our position, being **25% lower** than the results from the ISCST3 dispersion modeling demonstration previously approved by the APCP.

With regard to the specific allegations raised by the commenter (identified as A-H in Comment 94 above), the following responses are provided:

- A. The ambient air quality analysis for PM₁₀ contained in the draft permit is based on an inadequate model, the Industrial Source Complex Short Term, Version 3 (ISCST3).*

The ISCST3 model is an approved guideline model appropriate for construction permitting use. The ISCST3 model is, in fact, the predominant model for preconstruction modeling applications. The ISCST3 model remains today the department's recommended model for PSD applications³¹:

"The most current version of the ISCST model is recommended for most applications."

The ISCST3 model is adequate for the application, hence MDNR's continued use after the initial comments were made regarding the CALPUFF model. If anything, the ISCST3 model is overly conservative in its estimation of PM₁₀ concentrations from low-level sources. Holcim provided the APCP with a detailed analysis of the conservatism inherent within the ISCST3 demonstration in a March 3, 2003 letter. This conservatism was evident in the supplementary CALPUFF analysis results provided to the department in March 2004.

In fact, at the time of the department's approval of the air dispersion modeling protocol, and even when the CALPUFF comment was initially made, CALPUFF was not an approved EPA Guideline model.

The commenter's allegation that the ISCST3 model is inadequate is unfounded.

- B. Both the EPA and MDNR have denounced the ISCST3 model as insufficient.*

Again, the commenter has taken statements out of context and liberally paraphrased them. Neither EPA nor MDNR have "denounced" the ISCST3 model. To the contrary, the ISCST3 model remains a valid guideline model according to EPA's *Guideline on Air Quality Models* and the department's *Guidance for Modeling Protocols for Construction Permits*.

EPA originally requested a CALPUFF analysis of near-source PM₁₀ impacts from the Lee Island facility. A supplementary (7-month) analysis was provided to both agencies on March 12, 2004, and EPA even commented on the subject in their March 29, 2004 comment letter to the APCP³²:

³¹ "Missouri Air Pollution Control Program Guidance for Modeling Protocols for Construction Permits, <http://www.MDNR.state.mo.us/alpd/apcp/protocol2.pdf>, Item no. 5.

³² March 29, 2004 letter from JoAnn Heiman, Chief, Air Permitting and Compliance Branch to Leanne Tippet, Staff Director, Air Pollution Control Program, p. 12.

“We generally support the approach outlined in Condition (4)(E) requiring additional CALPUFF modeling.”

That is, the agency that originally made the request expressed satisfaction with the handling of the issue within the draft permit and did not share the commenter’s concern on this issue.

C. The draft permit should not grant the company the ability to start building the plant before first analyzing the results of a CALPUFF study.

The Preliminary Determination Condition (4)(E), requires Holcim to submit the results of a full 12-month CALPUFF study within 3 months of collecting 12 months of site data. According to the timing of the meteorological monitoring, this will occur later in 2004, years before the start of operations. The department is not hindered in any way by the start of construction from requiring additional mitigation, including facility design or operational changes, should the results of the CALPUFF modeling indicate a potential problem with a NAAQS or PSD increment standard. Again, however, the 7-month results strongly suggest this will not occur.

D. As the requirements for a CALPUFF analysis now stand in the draft permit, MDNR’s position abruptly deviates from its stance on this issue since August 2001.

The department is entitled to change its mind, although in this case the department’s position has not “abruptly deviated.” Even in the original August 21, 2001 letter³³, the department noted that the issue would not be an impediment to permit issuance, as long as a supplementary CALPUFF study (on a sub-set of data) was provided prior to permit issuance:

“As long as the preliminary [CALPUFF] modeling demonstrates compliance, the permit process shall not be delayed due to the collection of the on-site meteorological data.”

“The program will issue the permit if the preliminary modeling analysis [on a subset of data] demonstrates compliance and all other issues with the application have been resolved.”

In this original request, Holcim was to submit a preliminary modeling analysis [using CALPUFF] demonstrating compliance. This is exactly what occurred during the public comment period. The department is now poised to issue the permit as described in the August 21, 2001 letter.

E. Even though impact analyses are case-specific, a recent situation in New York proves on-site terrain differences can result in significant differences in impact analyses.

As the commenter correctly indicates, impact analyses are case-specific and the comment is irrelevant to the Lee Island Preliminary Determination.

³³ Letter from Roger Randolph, APCP Director, to Barry Lower, Project Manager, Holnam, Inc., August 11, 2001.

F. In this case, MDNR will act in violation of the federal and state air pollution laws if it relies on the current modeling analysis for PM₁₀.

The regulatory requirements are quite clear on the matter of demonstrating compliance with air quality standards using modeling. The department rigorously followed the requirements of 10 CSR 10-6.060 (8). Additionally, the modeling was conducted according to an APCP-approved protocol and was verified and certified in compliance with air quality standards by the APCP.

G. MDNR cannot make a permit decision based on an unreliable impact analysis.

The ISCST3 impact analysis is not unreliable. The analysis was performed according to an APCP-approved protocol, was verified by the modeling staff of the APCP, and was determined to be a conservative (i.e., over-predictor) of impacts in both theory (see the March 3, 2003 letter from Holcim) and in practice (see March 12, 2004 comment including supplementary CALPUFF modeling).

H. Holcim's impact analysis must prove – without significant uncertainty – that the constructed facility will not generate particulate matter emissions that violate ambient air quality standards.

The Preliminary Determination included a thorough description of the ambient air quality impact assessment and clearly showed that the Lee Island facility will be in compliance with ambient air quality standards. The additional supplementary CALPUFF analysis adds additional insurance to this conclusion, as will the full 12-month CALPUFF analysis that has been previously committed to.

Again, it is important to note that the agency that originally posed the “CALPUFF comment”, EPA Region 7, did not comment negatively on the issue in its comments to the APCP.

The permit record is clear that the facility will operate in compliance with all NAAQS and Class II PSD increment standards for PM₁₀.

5.4.7. Mercury Comments

Comment No. 141.

What is the MACT for reducing Holcim's emission of toxic mercury?

Response

See Response to Comment No. 142.

Comment No. 142.

In violation of the Clean Air Act, MDNR failed to incorporate in the Draft Permit a case-by-case Maximum Achievable Control Technology (MACT) determination for the emission of mercury.

Neither EPA nor MDNR has set a legally adequate MACT standard for the emission of mercury pursuant to CAA §112(d) or 112(j). As such and in accordance with 112(g), MDNR regulations, and congressional intent, Holcim must apply to the MDNR for a case-by-case MACT determination. We urge MDNR not to issue its draft permit without the requisite limitations on this poisonous air pollutant.

Response

As shown below, the commenter is incorrect. As such, no change in the permit is necessary.

The commenter asserts the Draft Permit is defective because it does not contain an emission limitation and/or require emission control technology for mercury and cites § 7412(g) of the Clean Air Act (42 U.S.C. §§ 7401 *et seq.*) (“CAA”) and corresponding federal and state regulations. In support of such contention, the commenter alleges MDNR:

“ . . . must establish a MACT emission limitation for mercury that adheres in the permit because neither the EPA nor MDNR has established an adequate emission standard for Portland cement plants. (Comment at pg. 15).”

As authority for the above allegation, the commenter cites §§ 7412(c), (d), (g) and (j) of the CAA; 40 C.F.R. § 63.43; 10 CSR § 10-6.060(9); as well as the D.C. Circuit Court’s remand in *National Lime Ass’n v. EPA* (233 F.3d 625, 630; D.C. Cir. 2000) (“*National Lime*”) of the PC MACT regulation to EPA to set “MACT floor” standards for mercury.

Based on the following, the commenter’s allegations are without merit and contrary to applicable statutory and regulatory requirements and therefore should not be considered for purposes of MDNR’s issuance of the Final Permit.

1) Section 7412(g)(2)(B) of the CAA states, in part, as follows:

. . . [N]o person may construct or reconstruct any major source of hazardous air pollutants, unless the Administrator (or the State) determines that the maximum achievable control technology emission limitation under this section for new sources will be met. Such determination shall be made on a case-by-case basis where no applicable emission limitations have been established by the Administrator.

The referenced “maximum achievable control technology emission limitation” as applicable to the Portland cement manufacturing source category (a source category listed pursuant to § 7412(c) of the CAA) is the National Emission Standards for Hazardous Air Pollutants From the Portland Cement Manufacturing Industry (40 C.F.R. Part 63, §§ 63.1340 *et seq.*) (“PC MACT”) promulgated June 14, 1999. As required pursuant to § 7412(d)(2) of the CAA, EPA specifically conducted a separate MACT determination for mercury as well as other pollutant emissions from the source category in promulgating the PC MACT standards. For each pollutant/affected source, MACT floor technologies as well as beyond-the-floor control options were reviewed by EPA.

The preamble to the proposed PC MACT standards stated the following:

The proposed regulation does not establish limits for mercury emissions from cement kilns because no MACT floor control technology has been identified. A mercury emission limit based on a beyond-the-floor control option was determined not to be justified as discussed in section V.D.2. (63 Fed. Reg. 14182, 14197) (March 24, 1998).

As promulgated, the PC MACT does not establish emissions limitations for mercury for new or existing affected sources subject to the PC MACT. This determination, following a review and study of the source category by EPA, is the equivalent of “no control” being selected by EPA as the MACT floor emission limit for mercury under the PC MACT.

- 2) Based on the above, a MACT technology emission limitation for mercury applicable to the Portland cement manufacturing source category was determined by the EPA and has been promulgated (*i.e.*, the PC MACT wherein the MACT floor for mercury is no emission control). Accordingly, a case-by-case determination regarding mercury emission limitations applicable to the proposed plant is not required pursuant to § 7412(g)(2)(B) of the CAA..
- 3) The commenter’s reference to the requirements specified in § 7412(j) of the CAA. and 40 C.F.R. § 63.43 as requiring a case-by-case MACT determination for the proposed facility is incorrect. The case-by-case MACT determination requirements specified pursuant to § 7412(j) of the CAA. and 40 C.F.R. Part 63 are applicable only if EPA fails to promulgate a standard for the source category/subcategory pursuant to § 7412(d) of the CAA. by the specified deadline. In effect, the requirements of § 7412(g) establish a procedure whereby an equivalent emission limitation is established by permit based on EPA’s failure to promulgate a relevant standard.

As noted above, the EPA has promulgated MACT standards applicable to the Portland cement manufacturing source category (*i.e.*, the PC MACT). Therefore, the requirements of § 7412(j) of the CAA. and 40 C.F.R. § 63.43 are not applicable. Recent regulatory revisions regarding 40 C.F.R. § 63.50 (implementing § 7412(j) of the CAA.) confirm this fact. In relevant part, 40 C.F.R. § 63.50(c) states the following:

The procedures in §§ 63.50 through 63.56 apply for each affected source only after the section 112(j) deadline for the source category or subcategory in question has passed, and only until such time as a generally applicable Federal standard governing that source has been promulgated, the owner or operator of the affected source and the permitting authority are not required to take any further actions to develop an equivalent emission limitation under section 112(j) of the Act. (Emphasis added)

There can be no question that the PC MACT qualifies as a “generally applicable Federal standard” which governs the Portland cement manufacturing source category.

- 4) Although the court in *National Lime* remanded the issue of establishing a MACT floor for mercury to the EPA, the court did not vacate or otherwise limit the applicability and/or required compliance with the currently promulgated PC MACT. Therefore, the fact remains that EPA has previously promulgated a generally (if not specifically) applicable Federal standard which pertains to the Portland cement manufacturing source category.

The basis for the remand in *National Lime* was that EPA’s previous MACT floor determination regarding mercury (*i.e.*, no control) was based solely on the fact that there were no technology-based pollution control devices for mercury. In speaking with EPA’s Emission Standards Division regarding the remand, we have been informed EPA has not at this time promulgated any revisions to the PC MACT based on the court’s remand. Further, it may be twelve months or longer before revisions, if any, are proposed. Regarding the issue of the MACT floor for mercury, EPA indicated there has been no final determination that anything other than “no controls” would be required.

5.5. A. A. Linero Comments

A resident of Tallahassee Florida, Mr. A. A. Linero, submitted the following comments to the department on March 29, 2004.

Comment No. 143.

I am not advocating a large scrubber or an activated carbon filter. However, between reliance on “inherent dry scrubbing/occasional lime spray” and the advanced technologies, a number of options exist that would likely be cost-effective. These include continuous ducting of fine lime from the area of the calciner to the upper sections of the preheater (e.g., F.L.Smith DeSO_x Process) to reduce SO₂ emissions before they reach the raw mill.

Lime injection for further SO₂ reduction can be practiced at several locations in the process without defeating or duplicating the inherent dry scrubbing credited to the raw mill and without installation of large industrial wet or dry scrubbers. Ducting of fine lime from the calciner to the upper preheater stages is also allowed to achieve the emission limits given below. The SO₂ emission limit can be cut in half by these measures.

Response

Holcim disagrees with this comment. In the permit application, Holcim provided an analysis that concluded

“Since LSD [lime spray drying] provides the same function as the in-line raw mills at approximately the same control efficiency, it is therefore not

appropriate to operate LSD systems in series, as this would represent stacking equivalent technology³⁴.”

This analysis concluded that the placement of an additional LSD (or even dry lime scrubber) between the raw mills and the preheater tower was not appropriate.

In response to requests by the APCP regarding placement of an LSD system after the raw mills but before the main filters, Holcim provided information to the department in a February 19, 2003 letter.

Utilizing the LSD system as an “add-on” type control device would consist of installing it between the in-line raw mills and the particulate matter control device (PMCD) that serves the in-line kiln/raw mill system. Placing the LSD system between the in-line raw mills and the PMCD, however, would not allow the LSD system to operate within the required temperature window.

The in-line raw mills effectively cool the kiln gases, performing their intended raw material drying function. These cool gases would then be treated with the hydrated lime slurry injection, resulting in a wet gas stream. Since this treatment is prior to the PMCD, the gases are also particulate-laden. Instead of the fine particle of calcium sulfate being transferred to the PMCD, a mud-like material would form in the system. The mud would collect in the bottom of the conditioning tower and ductwork, as well as being carried through to the PMCD. The mud would prohibit conveyance and recycling, lead to system plugging and damage the PMCD. Therefore, utilizing the LSD system in this manner is not a technically feasible BACT option.

The BACT controls for Lee Island represent 92% control efficiency for SO₂ based on a mass balance of sulfur inputs. The commenter’s characterization of IDS as less effective control technology is mistaken.

Comment No. 144.

Continuous use of dry additive (lime) system is the most common strategy for reducing SO₂ in the German cement industry. It is practiced at 11 installations in Germany.

Response

Holcim disagrees with this comment in that it infers additional control is required. See the Response to Comment No. 143. The use of dry additive (lime) system is synonymous with dry lime scrubbing (“DLS”), an analysis of which was contained within the permit application and related addenda, incorporated by reference into the Preliminary Determination.

Comment No. 145.

The SO₂ averaging time should be reduced to monthly (or shorter) basis rather than a 12-month basis. At new kilns in Florida, with inherently low sulfur in the raw materials, BACT is 0.27 lb/ton clinker or less during averaging periods between 3 and 24 hours!

³⁴ Response to Preliminary Best Available Control Technology Determination, November 20, 2002, Attachment 2, p. 2-20.

The consideration here is for raw material sulfur that generally is not a problem in Florida.

Response

Holcim disagrees with this comment. For a response to the BACT averaging time, see Response to Comment No. 12.

Regarding the BACT emission rate, the commenter correctly identifies that the issue is based on raw material sulfur, which is an extremely site-specific. Florida is well-known (at least in the cement industry) for low sulfur raw materials. While in general, the raw materials used at Lee Island are described as “low-sulfur” or “high-quality,” the limestone deposits in Florida are orders of magnitude lower in sulfur than those at Lee Island. Holcim supplied the department with the information related to the pyritic sulfur content of the Lee Island raw materials (and a comparison with “high-sulfur” raw materials at its Texas facility) in the permit application.

Since SO₂ emissions from modern cement kilns are directly related to the raw material sulfur contents, which are significantly different between Missouri and Florida, the comment requires no further response.

Comment No. 146.

MSC in the calciner needs to be described so that its components (at least two burners in the calciner/kiln inlet zone in addition to the main burner) are actually installed and operated in a reducing atmosphere as described by the manufacturer’s product literature.

It is important to realize the full potential of the MSC product if that is the basis of the MDNR BACT decision. Numerous kilns have been installed in the United States without the kiln inlet burner although it is a key feature of the MSC technology. This may occur because the projects are able to achieve the relatively high values for NO_x for certain projects without having to install the burner.

Response

Holcim disagrees with the comment. The BACT determination is a combination of both technology requirements and emission limits. Additionally, the requirements of Special Condition (5) for a summer time cap on NO_x emissions will require Holcim to optimize the facility for the most efficient operations.

Requiring additional conditions as to the specific design or implementation of a control technology is not necessary. Multi-stage combustion has been thoroughly described in the permit application, which is included by reference. Additionally, due to the innovative combination of MSC and SNCR, many of the commenter’s requirements may preclude the eventual optimization of the system.

It is clear that the Lee Island facility does not have emission limits that are “relatively high values for NO_x” compliance that the commenter asserts is an issue at other facilities.

Comment No. 147.

The NO_x averaging time should be reduced to a monthly (or shorter) basis rather than a 12-month basis.

While averaging times in Florida are now on a 24-hour basis for new kilns, I respect the preference by MDNR for a longer averaging period. However a 30-day rolling average should be sufficiently long and will allow the agency to enforce the limit quickly following commencement of operation instead of having to wait one year to have 12 months of enforceable data. It would be fair to wait until 180 days after startup to actually begin enforcing the NO_x limit.

Response

Holcim disagrees with the comment regarding monthly (or shorter) averaging periods. See Responses to Comments 12, 14, 15, 16, and 17. In summary, Holcim provided the department with a detailed analysis of process variability which supported the averaging of emissions on a 12 month rolling average basis.

With regard to the determination of compliance, the department has already required in the Preliminary Determination an update of the 12-month rolling average emissions each month.

Additionally, in a comment provided to the department on March 29, 2004, Holcim proposed a monthly limit for the first 12 months of operations to address the commenter's concern that compliance be verified without waiting 12-months. Holcim agrees with the comment with regard that it is fair to wait 180 days after startup to begin compliance reporting and would support the department integrating that condition into the final permit.

Comment No. 148.

The goal at the end of the initial two-year period should be lowered to 2.45 lb/ton of clinker reflecting the actual emissions from similar MSC kilns in Florida that started up 5 to 8 years prior to the presently anticipated startup date on the Holcim Lee [sic] project.

The Florida Rock cement kiln with the Polysius MSC design has a 30-day limit of 2.45 lb/ton of clinker. The new Suwannee American Plant has a 24-hour limit of 2.9 lb/ton and has been averaging emissions approximately equal to those from Florida Rock on a 30-day basis. The Suwannee kiln has been in operation for a little over one year. They have not yet installed the kiln inlet burner to possibly achieve even lower emissions. The Florida DEP will revisit the present BACT limit after some additional data collection.

Titan America will start up a new kiln in Miami at Tarmac Pennsuco. That project netted out of PSD, but the kiln has a 12-month non-BACT limit of 2.38 lb/ton of clinker.

Response

Holcim disagrees with the comment. The Florida projects were originally permitted at emission limits of 2.8-3.1 lb/ton (with good combustion practices, low-NO_x burners or

multi-stage combustion as BACT controls)³⁵. The naturally low sulfur raw materials available to the Florida kilns enable a much more aggressive use of MSC without concern for sulfur volatilization and material build-up in the lower sections of the preheater tower. This is a key concern at Lee Island, and effectively limits the degree of MSC control to 35% as detailed in the permit application.

The post-24 month NO_x emission limit in the Preliminary Determination of 2.4 pounds NO_x per ton clinker compares very favorably to the Florida experiences, even without the very low sulfur raw materials the Florida facilities enjoy.

Also, the commenter's reference to the non-BACT limit at Titan America is not applicable. Many sources have accepted lower than BACT effective limits in net-out actions in order to avoid triggering PSD review.

Comment No. 149.

By now ammonia or urea injection known as SNCR is actually BACT and not an ICT. This is based on cost-effectiveness and several dozen world-wide applications.

Response

Holcim disagrees with this comment. Please see Responses to Comments No. 1, 2 and 6.

Also, it is Holcim's understanding that none of the Florida cement kiln projects cited by the commenter in this and other comments have SNCR as the BACT controls.

Comment No. 150.

It is fair to provide some time (perhaps two years) to optimize MSC and SNCR but not five years (seven years from startup).

Response

Holcim disagrees with the comment. The commenter has mistaken the SNCR ICT program as an "optimization period", when, in fact, it is a testing and evaluation period that will follow a department-approved protocol. The testing and evaluation of SNCR ICT must occur after the optimization of the precalciner/kiln system and MSC. The length of the test is primarily driven by the need to examine the effectiveness of the technology on a variety of combinations of both process and ambient conditions.

Comment No. 151.

Ammonia injection in the presence of a catalyst, known as SCR, is actually technically feasible and potentially an ICT. SCR can only be dismissed on economic arguments or if the combination of SNCR and operation of the calciner in a reducing atmosphere (e.g., MSC) together can achieve similar results.

³⁵November 20, 2002, *Response to Preliminary Best Available Control Technology Determination*, RACT/BACT/LAER Clearinghouse Summary for NO_x, p. 2-55.

No recent kiln in the U.S. has been permitted with a NO_x value less than 2 lb/ton of clinker on any averaging time. It would be prudent to try out the SNCR, see what that can accomplish and forego the debate on SCR and whether it works or whether it achieves 0.5 or 1, or 2 lb/ton of clinker.

Response

The comment sets forth two separate, yet opposite positions regarding SCR. For a detailed response regarding technical feasibility of SCR, see Response to Comment No. 138.

With regard to the second comment on the issue, Holcim agrees. At this point in time, the only conclusion that can be made is that it has not been demonstrated and is neither available nor applicable as a control technology.

Comment No. 152.

The NO_x BACT limit soon after implementation of SNCR (and MSC) should be 2.0 lb/ton of clinker given the Florida experience with MSC alone. MDNR should retain the right to further lower this value as well as the final SO₂ limit (and reconsider averaging times) following a period of optimization. This is in view of the achievement of 1 lb/ton clinker by SNCR in conjunction with a Low NO_x calciner at the SCANCEM Slite kiln in Gottland Sweden.

Response

Holcim disagrees with the comment. See Response to Comment No. 148. The comment's citation of Florida's cement industry is not applicable with regard to NO_x emissions from MSC kilns due to the extremely low sulfur content of the raw materials in Florida. See Response to Comment No. 145.

At Lee Island, the presence of pyritic sulfur in the raw materials will effectively limit the control efficiency of MSC at 35% as detailed in the permit application. The commenter did not have the data regarding Lee Island raw material sulfur content in making the comment, which was provided in the permit application and considered by the department in the Preliminary Determination.

Comparison of the Preliminary Determination for Lee Island to the Swedish kiln's results are similarly hampered by the different regulations placed on the European cement kilns. Again, operation of SNCR and MSC at such high NO_x control efficiencies may be possible, but it has not been proven to be possible based on the site-specific raw materials and in accordance with the U.S. regulatory restrictions on visible opacity.

Comment No. 153.

European-based equipment manufacturers, including the Holcim project's supplier, do in fact supply or include equipment to meet values of 500 mg/m³ (2.3 lb/ton of clinker) or lower at new (and some existing) cement kilns in Europe on a 24-hour basis.

Response

Holcim disagrees with the comment to the extent that it infers a lower NO_x limit or shorter averaging time is appropriate based on European experiences. See Response to Comment No. 26.

Comment No. 154.

Emission limits for VOC and CO should be reviewed given the availability of hot tertiary air to complete combustion.

This limit should be reconsidered and reduced. The staggered injection of tertiary air from the kiln hood and clinker cooler will promote much greater burnout than suggested by this standard. The final step in the MSC system should insure much lower CO levels.

I recommend that MDNR gather CO data from new kilns throughout the country that employ hot tertiary air systems and reconsider this limit.

Response

Holcim disagrees with the comment. With regard to VOC, the emissions rate of VOC is equivalent to the MACT standard for THC. By definition, this represents the maximum achievable control technology limit for VOC.

With regard to CO, see Response to Comment No. 57.

The department has correctly analyzed CO and VOC emissions and required correct limits. No change in the final permit is required.

Comment No. 155.

Imported raw material specifications on mill scale and ash should be eventually prepared to ensure oily or sooty substances do not unduly contribute to VOC or CO.

Response

The emission limitations in the Preliminary Determination are sufficient to ensure that Holcim will specify and procure imported raw materials of sufficient quality to ensure compliance. See Response to Comment No. 82.

6. ATTACHMENT 1: ST. LAWRENCE CEMENT SCR RESPONSE